Environmental Quality Management

WILEY

RESEARCH ARTICLE

Green Human Resource Management (GHRM) and Corporate Social Responsibility (CSR) in Reducing Carbon Emissions for Sustainable Practices

Dewi Puspaningtyas Faeni[1] | Retno Fuji Oktaviani[2] | Hosam Alden Riyadh[3,5] | Ratih Puspitaningtyas Faeni[4] | Baligh Ali Hasan Beshr[5]

[1]Lecturer of Faculty Economics and Business, Universitas Bhayangkara Jakarta Raya, South Jakarta, Indonesia | [2]Faculty of Economics and Business, Universitas Budi Luhur, South Jakarta, Indonesia | [3]School of Economics and Business, Telkom University, Bandung, Indonesia | [4]Faculty of Economics and Business, Universitas Trilogi, Jakarta, Indonesia | [5]Department of Administrative Sciences, College of Administrative and Financial Science, Gulf University, Sanad, Bahrain

Correspondence: Dewi Puspaningtyas Faeni (Dewi.puspaningtyas@dsn.ubharajaya.ac.id) | Hosam Alden Riyadh (hussam_19860@yahoo.com)

Received: 18 October 2024 | **Revised:** 20 December 2024 | **Accepted:** 11 January 2025

Funding: The authors received no specific funding for this work.

Keywords: carbon emission | CSR implementation | GHRM practices | post-COVID-19 | sustainable environmental management

ABSTRACT

This study aims to explore the positive influence of green human resource management (GHRM) and corporate social responsibility (CSR) implementations on carbon emission reduction as an environmental control strategy in the transportation industry. This study is descriptive in nature and employs a quantitative approach. We derived the study's data from a literature analysis and collected primary data from 1080 CSR employees in the transportation industry using questionnaires. The results suggest that the application of the GHRM concept in the transportation sector contributes to a paradigm shift among employees toward ecological sustainability. To emphasize the environmental conservation and management approach, CSR initiatives include planting trees and mangroves, implementing 3R, water villages, community empowerment, renewable energy, and other initiatives. To reduce plastic use and improve waste segregation, COVID-19 compelled all enterprises to implement a paperless policy and embrace the green transportation concept, thereby mitigating environmental impact. Maintaining a green culture at work is one way to recognize and thank staff members who consistently contribute to solving environmental problems, particularly those related to reducing carbon emissions. Moreover, the novelty of this study is that a holistic approach—combining green HRM, CSR, and operational changes—can foster a sustainable workforce and achieve environmental goals in the transportation sector. This research provides valuable insights for policymakers, managers, and academics interested in driving ecological sustainability through strategic human resource management and CSR initiatives.

1 | Introduction

The COVID-19 pandemic has profoundly affected numerous industries financially, shaping the execution of corporate social responsibility (CSR) initiatives, especially regarding carbon emission reduction (Lenart-Gansiniec et al. 2023). The pandemic has exacerbated numerous social and economic challenges, leading to sustainability becoming a priority for companies globally. Following the COVID-19 pandemic, several social and economic problems have surfaced. Sustainability has consequently become a crucial concern for companies all around the world. The creation of a circular economy that is both resource-efficient and

self-sustaining hinges on the adoption of sustainable practices by organizations (Ababneh 2021). The global scholarly community has demonstrated significant interest in green human resource management (GHRM) practices and sustainable environmental management, primarily due to the heightened awareness of environmental consequences following the COVID-19 pandemic (Chen et al. 2020). Organizations recognize human resource management for its strategic policy development and its facilitation of environmentally friendly transformation. This, in turn, has a broader impact on society and the economy. The emphasis on sustainability and environmental consciousness has grown significantly over the past 20 years (AlKetbi and Rice 2024). This exemplifies the genesis of the pioneering concept of GHRM practices. Researchers have extensively studied the global economy, energy, and the impact of rising carbon emissions due to the COVID-19 pandemic. Here we outline a potential strategy for restoring the structure of sustainable environmental and energy development. The review finishes by providing a perceptive overview that addresses the obstacles and prospects of sustainable development goals. This study will aid researchers in assessing global environmental and energy-related impacts.

> "*In Indonesia, these circumstances have led to several instances of employment termination by certain organizations.*"

In Indonesia, these circumstances have led to several instances of employment termination by certain organizations. CSR initiatives in Indonesia have stalled since the country's financial woes worsened during the COVID-19 pandemic (Alhan 2022). Conversely, during the crisis caused by the COVID-19 epidemic, the deteriorating economic and social conditions, particularly in relation to environmental issues, resulted (Faeni et al. 2023). Despite the government's efforts to implement methods for managing and reducing the impact of the COVID-19 crisis during the past 2 years, the involvement of various parties and stakeholders, including the commercial and industrial sectors, is crucial. The business and industrial sectors play a crucial role in enhancing the well-being of the community and are also impacted by social investment initiatives, known as CSR programs (Chen et al. 2021). However, for some Indonesian businesses, the COVID-19 outbreak has meant a drop in revenue, leading to a debate among certain organizations with reduced income over the application of CSR during the epidemic. Corporate CSR funds can significantly aid the government in managing and alleviating the COVID-19 pandemic crisis (Taamneh et al. 2024). Amidst the current pandemic, firms may have difficulties in innovating their CSR activities. Even if the COVID-19 epidemic is still going strong, environmental deterioration is still a problem. It has brought about new environmental concerns due to the dramatic increase in the use of masks and other medical equipment (Khan and Muktar 2021; Peccei and Van De Voorde 2019).

> "*The investigation focused on several transportation industries in Indonesia, where companies specializing in public transportation services adopted GHRM practices.*"

The investigation focused on several transportation industries in Indonesia, where companies specializing in public transportation services adopted GHRM practices. These companies have continued to engage in CSR initiatives within the community amidst the ongoing COVID-19 pandemic. Companies regularly conduct these CSR activities, some of which have undergone adaptations to cater to the specific needs arising from the pandemic. Based on the 2020 annual report, some transportation industries have implemented CSR initiatives in three provinces where the company operates. The Indonesian companies specifically design the CSR program to benefit and allocate a budget for it. They allocated a budget of IDR 972.93 billion for CSR activities in 2020 and provided an average of IDR 963.15 billion in assistance. In 2020, and prioritized providing CSR activities for carbon emission reduction, which amounted to IDR 645.31 billion. Several companies have prioritized efforts to manage carbon emission reduction post-COVID-19, both within the company and in the community. This study is to shed light on how GHRM relates to CSR initiatives within the framework of sustainable environmental management. This research is crucial for implementing solutions to diverse environmental issues, as it examines the role of GHRM in environmental CSR implementation (Xie and Lau 2023; Laporan Tahunan OJK 2022). Researchers have conducted several studies on GHRM, specifically focusing on its role in corporate management development (Zaid and Jaaron 2023; Rubel et al. 2023; Nekhili et al. 2021). Therefore, this study deviates from previous studies by emphasizing how GHRM affects other aspects, such as CSR practices. This study explores this link further, considering the importance of CSR practices for reducing carbon emissions following the COVID-19 pandemic. The authors formulated the following research questions based on the introduction and research focus:

RQ.1 What is the impact of GHRM practices on carbon emission reduction in Indonesia's transportation industry following the COVID-19 pandemic?

RQ.2 Do GHRM practices influence the implementation of CSR initiatives in Indonesia's transportation industry?

RQ.3 What is the relationship between sustainable environmental management and carbon emission reduction in Indonesia's transportation industry?

RQ.4 Does sustainable environmental management affect the implementation of CSR initiatives in the transportation industry?

RQ.5 Does the COVID-19 pandemic affect the implementation of CSR initiatives in Indonesia's transportation industry?

RQ.6 What is the role of CSR implementation in achieving carbon emission reduction in Indonesia's transportation industry?

The main objectives of this study are to answer the questions above and to investigate the intersection of GHRM, CSR, and environmental sustainability, with a particular focus on the transportation sector's response to the challenges posed by the COVID-19 pandemic. The purpose is to provide practical insights for integrating GHRM, CSR, and sustainable practices to achieve environmental sustainability in the transportation industry. Furthermore, this study makes both practical and theoretical contributions to the intersection of GHRM, CSR, and environmental sustainability. On a practical level, the research offers actionable insights for policymakers and managers by demonstrating how GHRM strategies—such as green recruitment, training,

and reward systems—can foster eco-conscious behavior among employees, leading to tangible reductions in carbon emissions. Additionally, it highlights the role of CSR activities, such as tree planting, community empowerment, and waste management, in supporting these goals, while post-COVID-19 adaptations, such as telecommuting and paperless policies, further reduce environmental impact. The study's emphasis on integrating green practices into operations provides a framework for businesses to balance economic and environmental objectives, enhancing their competitive edge and sustainability. Theoretically, the research contributes to the existing literature by proposing a holistic model that combines GHRM, CSR, and operational changes to create sustainable workforces in the transportation sector. This model bridges a gap by demonstrating how the collaboration of HR and CSR can achieve environmental goals. Overall, the findings underscore the strategic importance of aligning human resource policies with environmental goals to drive long-term sustainability in the transportation industry.

2 | Literature Review and Research Model

2.1 | Theoretical Framework

> "*Resource-based view (RBV) theory is one of the most widely used conceptual frameworks in modern human resource management research.*"

Resource-based view (RBV) theory is one of the most widely used conceptual frameworks in modern human resource management research (Barney 1991). He articulates how the RBV, as an economic tool of organizational performance, leverages business strategy and strategic management as its bases. Through this theory, organizations utilize strategic internal resources, capabilities, and essential competencies to achieve long-term market competitiveness. We have used the RBV theory to explore the impact of GHRM and environmental performance in the public transportation industry of Jakarta, Indonesia. RBV broadly conceptualizes enterprises or organizations as collections of resources (Pereira and Bamel 2021). These resources, whether tangible or intangible, possess the potential to create a competitive advantage. We've built on the RBV view to concentrate on specific resources, like knowledge and intangible assets, which enable a firm to achieve a competitive advantage. In this regard, these resources are no different from others. So far, firms have mainly used the RBV to account for their involvement in interorganizational alliances. As Ozdemir et al. (2023) say, the RBV theory says that combining GHRM and CSR to cut down on carbon emissions could make practices more sustainable. Using GHRM strategies helps companies find and keep employees who care a lot about the environment, which lets them make valuable contributions to the company's overall environmental performance (Aftab et al. 2022). Employees are an important internal resource for businesses. Equipping employees with proper green training, therefore, enhances the human capital base, which is rare, costly, and difficult to replace for any business. In the business world, green innovation, as an important aspect of the RBV, allows companies to develop new technologies and manufacturing processes that reduce waste, lower energy consumption, and promote cleaner production methods. Concurrently, attaining a competitive advantage empowers enterprises to surpass their rivals in terms of environmental performance. GHRM and green innovation work together to give companies a green competitive edge by making their employees more eco-friendly and coming up with new ways to do things. In the context of environmental performance, combining resources and talent can offer enterprises a lasting competitive edge (Kim et al. 2023).

Besides that, green behavior theory suggests that companies can adopt eco-friendly practices and initiatives to reduce environmental negative impacts (Naz et al. 2023; Ojo, Tan, and Alias 2022). By incorporating sustainability principles into their business decisions, companies can ensure that they are making environmentally responsible choices. This can include implementing sustainable manufacturing processes, using renewable energy sources, reducing waste and emissions, and encouraging recycling and conservation within organizations. Besides integrating sustainability principles, companies can also provide environmentally friendly products or services that replace demand for nongreen alternatives. Companies can also make a long-term commitment to environmental principles by continuously striving to improve their sustainability efforts and practices. In doing so, the company contributes to ecological conservation, positions itself as socially responsible, and attracts environmentally conscious consumers. Companies can implement green behavior through a variety of strategies. Companies can show green behavior by evaluating the environment, setting clear goals, incorporating sustainability into their mission, values, and culture, investing in eco-friendly technologies, starting recycling and waste management programs, getting employees involved, forming partnerships with environmentally conscious suppliers and vendors, making eco-friendly purchasing policies, and working with stakeholders to stress how important it is to promote sustainable practices.

Moreover, it is also critical for organizations to periodically measure and evaluate their environmental performance, identify areas for improvement, and communicate their eco-friendly initiatives to stakeholders. One important area for the implementation of green behavior in the company is GHRM practices. GHRM has emerged as an essential business strategy for organizations that look to integrate environmental and sustainability management practices into their operations. This approach recognizes that employees play a pivotal role in driving initiative and promoting green behavior within an organization. Organizations can create an environmental awareness culture and facilitate sustainable employee behavior by incorporating green principles into HRM practices. Green HRM encompasses a wide range of practices, such as environmentally friendly recruitment and selection, ecologically friendly training and development, and eco-friendly rewards, all aimed at fostering sustainable behavior among employees (Rawashdeh 2018). One of the main ways in which Green HRM influences green behavior is through environmentally friendly recruitment and selection practices (Chaudhary 2020; Dumont, Shen, and Deng 2017). In this way, organizations that incorporate sustainability and environmental values into the recruitment and selection process are likely to attract candidates who are already environmentally sensitive or willing to learn and engage in green behaviors. This will be possible through the inclusion of questions on sustainability and attitudes toward the environment in the interview stage,

in addition to evaluating the candidate's past experience and knowledge of eco-friendly practices. Additionally, companies can pay attention to work engagement in maintaining and implementing green behavior practices. GHRM practices aim to integrate environmental concerns into HRM processes and motivate employees to engage in green behavior. Research in the area of green HRM shows that applying eco-friendly practices is beneficial for the environment and positively influences the behavior of employees (Ababneh 2021; Aboramadan 2022). Recently, workplace engagement has been an important area of study in the mediation of green behavior. Employees who are engaged in their work and have a sense of meaningfulness in their job in an environmentally aware organization exhibit green behavior both within and outside the workplace.

> *"Employees who are engaged in their work and have a sense of meaningfulness in their job in an environmentally aware organization exhibit green behavior both within and outside the workplace."*

However, this research used RBV, which, out of all the theories discussed, demonstrates the strongest correlation with GHRM and CSR's ability to reduce carbon emissions. This is because RBV is based on developing internally important resources, like the workforce, to achieve the mission of sustainability. Regardless, green behavior theory adds to RBV by focusing on the part of outside factors that can encourage people to behave and do things that are beneficial for the environment. It has demonstrated the way GHRM assists organizations in meeting stakeholders' demands for environmental concerns. Together, these theories provide a comprehensive framework for understanding how GHRM, CSR, and carbon emission reduction intersect.

2.2 | GHRM Practices and Carbon Emission Reduction

> *"GHRM businesses use GHRM practices as a tactical approach to reduce carbon emissions and promote environmental responsibility and sustainability."*

GHRM businesses use GHRM practices as a tactical approach to reduce carbon emissions and promote environmental responsibility and sustainability. By incorporating green practices into their strategic processes for reducing carbon emissions, organizations can use GHRM techniques to achieve their environmental goals. The development of GHRM has reinforced the generally acknowledged understanding of its revolutionary idea. The term "GHRM" refers to socially and economically balanced activities that support sustainability. These actions have long-term advantages and help businesses fulfill their sustainability commitments, which include reducing carbon emissions using CSR (Jabbour, Santos, and Nagano 2010; Awain, Al-Ansi, and Jaboob 2023). Preserving a balanced and sustainable use and repair of natural resources is the major goal of GHRM's environmental component. Moreover, the organization's emphasis on safeguarding and promoting social connections and resources within the communities it operates in is what we refer to as the social component. The economic dimension of GHRM pertains to the organization's culture of creating value and its endeavor to maintain a sustainable balance between profit and loss in the production and distribution of products and services (Pham, Hoang, and Phan 2020).

In addition, companies provide a simple explanation of common green HRM practices and recommend GHRM activities. A large portion of the time and effort invested in researching this concept can be attributed to the growing fascination with sustainable development and environmental management among people all over the globe (Faeni et al. 2023). Therefore, it is crucial to acknowledge this fact by utilizing GHRM approaches, as the literature has highlighted the adoption of environmental practices as a significant objective for corporate performance (Faeni 2024). An efficient system for managing the environment arises when a company's environmental plans and objectives align with its long-term growth ambitions. Organizations need to find a productive way to balance the goals of industry development and environmental preservation. This is because empirical data demonstrates that businesses can increase their financial profits by implementing ecologically sustainable practices. An organization's HR function is essential to promoting a sustainable culture. The degree to which various firms adopt environmental policies is closely associated with the efficacy of GHRM programs. Recent scholars have greatly increased research and knowledge on GHRM. Establishing distinct patterns of environmentally conscious decisions and actions is one of the most crucial things HR managers can do to assist GHRM. According to Shafaei, Nejati, and Mohd Yusoff (2020), Zahrani (2024), He and Wang (2023), Faisal (2023), and Faeni (2024), establishing distinct patterns of environmentally conscious decisions and actions is crucial.

These general assumptions are based on current research and established principles in the field of human resource management. One of them states that, like conventional HRM practices, GHRM incorporates elements that are environmentally conscious, such as "green training and development," "green recruitment and selection," compensation, performance evaluation, and so forth. For instance, "green human resource management" strategies center on hiring people who support and show enthusiasm for environmental causes. This helps to create a greener recruiting and selection process (Al-Ansi et al. 2023). Emissions of carbon dioxide have devastating effects on ecosystems. To address this issue, several nations have begun to take alternative approaches. GHRM is a component of a comprehensive strategy to address this issue. Businesses should prioritize hiring high-quality employees if they care about reducing their environmental impact through energy use. A high level of environmental consciousness among workers will make it easier to solve the carbon emission problem. When hiring new employees, companies should keep these things in mind. It is preferable to hire people who already have a strong grasp of this understanding. Conversely, the present employees of the businesses should get the appropriate environmental training. This method will simplify energy conservation. This will enhance the eco-conscious consumption of energy. Solid evidence demonstrates a positive correlation between the performance of CSR, transformational leadership, and GHRM practices. The study demonstrates that transformational leadership moderates the link between GHRM and CSR, thereby enabling a leader with this style to enhance the effectiveness of GHRM practices and improve CSR outcomes. The results determined that all GHRM procedures significantly

improved CSR. The transformative leadership moderates the connection between GHRM and CSR in a positive way.

> *"Moreover, the strategy of reducing carbon emissions is essential for addressing climate change, and combating global warming is a critical environmental issue."*

Moreover, the strategy of reducing carbon emissions is essential for addressing climate change, and combating global warming is a critical environmental issue. The focus of this review of the literature is on studies that address carbon emission reduction. Cutting carbon emissions is a critical component of the global effort to mitigate climate change. This summary provides a comprehensive understanding of the strategies, challenges, and advancements in the effort to reduce carbon emissions. Moreover, technological developments make the reduction of carbon emissions contingent upon technological advancement. The development of renewable energy sources, such as solar and wind power, has significantly decreased the demand for nonrenewable fossil fuels. The global importance of low-carbon technology and sectors stems from their ability to expedite the transition to a low-carbon economy. financing for the environment. Green finance schemes, such as carbon trading and green bonds financially reward emissions reductions. According to a bibliometric analysis and systematic analysis, green money plays a vital role in financing initiatives that lower carbon emissions. The book (Chen and Liu 2023; Prabha and Raajarajeswari 2024) emphasizes the importance of carbon markets and financial development in meeting emission objectives.

Instruments of policy carbon taxes and emission trading programs are two examples of policy tools that are essential for promoting low-carbon growth. An examination of carbon trading programs demonstrates how important it is to use market-based strategies to successfully encourage emission reductions. The study suggests that we need to continuously adjust policy frameworks to effectively address changing challenges. However, it is impossible to create a low-carbon economy without making significant adjustments in numerous areas. Jia et al. (2018) defined the low-carbon economy research topic as the combination of bibliometric analysis and machine learning techniques. The evaluation emphasizes the importance of industrial decarbonization, energy efficiency, and environmentally friendly transportation in reducing emissions. The implementation of carbon reduction methods faces significant obstacles due to both economic restrictions and social acceptance. The exorbitant upfront expenses associated with renewable energy technologies and the reluctance of conventional sectors to embrace change provide significant obstacles. Technological constraints Technical and infrastructural constraints frequently impede the implementation of technological breakthroughs, despite their essential nature. Ensuring the dependability and effectiveness of renewable energy sources continues to be a formidable task. Therefore, this study formulates the following hypotheses based on the arguments presented above:

H1: *GHRM practices have a positive effect on carbon emission reductions in the transportation industry.*

H2: *GHRM practices have a positive effect on CSR implementation in the transportation industry.*

2.3 | Sustainable Environmental Management

> *"In the wake of the COVID-19 pandemic, the goals of GHRM initiatives are to preserve the environment and encourage sustainable corporate practices."*

In the wake of the COVID-19 pandemic, the goals of GHRM initiatives are to preserve the environment and encourage sustainable corporate practices (Jabbour, Santos, and Nagano 2010). The application of GHRM incorporates tactics including eco-friendly recruitment, training, pay, and performance evaluation to achieve ecologically sustainable company goals. The creation of GHRM addressed the sustainability demands of health, social justice, and organizational well-being. The underlying idea of GHRM is that it includes behaviors that support the balance of the three pillars of sustainability: the environment, society, and economy. This alignment provides long-term benefits. Maintaining a healthy balance between the use and replenishment of natural resources is another important goal of the environmental component of GHRM. The social component is all about an organization's dedication to maintaining and growing its sociocultural capital. The economic component of GHRM is the organizational concept of producing and providing goods and services in a way that strikes a balance between the sustainability of the business and ecologically responsible operating principles (Fawehinmi et al. 2020; Shaban 2019).

The concept of GHRM as an essential element of sustainability originally arose in the mid-2000s. During the time it took for COVID-19 to emerge and start making an impact, businesses began to see the significance of integrating environmental sustainability into their HR policies and practices. Thus, businesses have conceptualized GHRM as a method to enhance sustainable environmental management by promoting environmentally friendly behaviors among employees (Shoaib et al. 2021). It's urgent to improve our understanding of GHRM. Their study focused solely on the environmental aspect of sustainability in environmental management, even though they developed an integrated model that encompasses numerous GHRM factors and contingencies. Ren, Tang, and Jackson (2017) analyzed the GHRM literature thoroughly, drawing attention to the need for more research on the idea and offering academics and business leaders a road map for improving the GHRM area. However, the analysis of GHRM research did not specifically aim to reduce carbon emissions. Despite these statements, they provide evidence for the possibility of GHRM to achieve carbon emission reduction (Mohammad and Wasiuzzaman 2021).

However, recent researchers focus solely on the study of environmental sustainability. Despite their efforts to gather significant discoveries and advancements, GHRM and sustainable environmental management appear to have had limited research coverage and a narrow focus (Benevene and Buonomo 2020). Furthermore, sustainable environmental management is an essential tactic that seeks to guarantee the advancement of environmental preservation and economic development at the same time. It involves the employment of techniques that reduce damage to the environment, promote resource efficiency, and ensure the long-term viability of ecosystems. To achieve sustainability, sustainable environmental management employs a range of tactics and concepts. Resource efficiency entails the utilization

of resources in a more efficient manner to minimize waste and mitigate environmental impact. Rejeb et al. (2022) highlighted the significance of resource efficiency in promoting the circular economy, a fundamental aspect of sustainable environmental management.

> "*Consequently, businesses must adopt sustainable supply chain strategies in order to attain sustainability and lessen their negative environmental effects.*"

Consequently, businesses must adopt sustainable supply chain strategies in order to attain sustainability and lessen their negative environmental effects (Lăzăroiu et al. 2020). Therefore, the application of sustainable environmental management is necessary for both long-term environmental sustainability and the reduction of carbon emissions. By adopting strategies like resource efficiency, pollution prevention, and the use of renewable energy, organizations can significantly reduce their environmental impact. Successful implementation of SEM requires overcoming two major obstacles: fiscal constraints and regulatory concerns (Rejeb et al. 2022; Lăzăroiu et al. 2020; Torres de Oliveira, Ghobakhloo, and Figueira 2023). Moreover, greenhouse gas emissions, particularly carbon dioxide, have increased dramatically alongside the rapid acceleration of industrialization, which has boosted global economic growth (Dong et al. 2018). The increase in global temperatures, according to Jin, Wang, Yang, et al. (2022), has triggered a string of ecological calamities. If nations are serious about pursuing green development, they must control their CO2 emissions. The 178-party Paris Agreement (Khan and Muktar 2021) reflects the world's resolve to decrease carbon emissions. For instance, according to Li et al. (2019), China, the leading carbon emitter and the greatest developing nation in the world, has proposed a 60%–65% decrease in carbon intensity from 2005 levels by 2030. Due to its central role in supporting other industries, the transportation industry has grown substantially alongside the rapid pace of urbanization and industrialization. Additionally, transportation-related carbon emissions have been on the rise. The IPCC AR6 assessment predicts that transportation carbon emissions could rise by 65% from 2010 levels by 2050 (Gao et al. 2022). Numerous studies suggest that reducing carbon intensity can decouple economic growth from environmental degradation (Jin, Duan, Wang, et al. 2022). Decreases in the transportation sector's carbon intensity are, hence, crucial for environmentally responsible management. Moreover, environmentally sensitive management strategies are the focus of this study. The results show that CSR substantially affects environmental performance. CSR's favorable correlation with environmental strategy and green innovation improves environmental performance further. What this means is that these elements are crucial in bridging the gap between CSR and lower carbon emissions. GMs of large manufacturing companies can use this to strengthen internal resources, such as green innovation, environmental strategy, and CSR, all of which contribute to improved environmental performance. Consequently, this study posits the subsequent hypotheses grounded in the aforementioned arguments:

H3: *Sustainable environmental management positively affects carbon emission reduction in the transportation industry*.

H4: *Sustainable environmental management has a positive effect on CSR implementation in the transportation industry*.

2.4 | Post-COVID-19 and CSR Implementation

Since the onset of the COVID-19 outbreak, several misunderstandings have emerged. These misconceptions underscore the need for further exploration using various research methods, including literature reviews, case studies, and qualitative investigations. Enhancing GHRM's theoretical and empirical convergence may be achievable through a more rigorous approach. In their research, Khan and Muktar (2021) prioritized performance ratings over the valuable integrative analyses, contextual synthesis of past research, and instructive trajectories for future scientific investigation. As concerns about the state of the planet grow, GHRM and sustainable environmental management have become increasingly popular topics in academia. A new emphasis on long-term viability and ecological awareness has emerged in HRM during the last 20 years (Sult, Wobst, and Lueg 2024). Organizations adopting environmentally friendly practices have a ripple effect on society and the economy, with GHRM currently serving as a tool for strategic policymaking and an implementation mechanism to aid this. An example of this is the introduction of the novel concept of GHRM. The COVID-19 pandemic's global expansion has impacted environmental management strategies across a wide range of nations, highlighting the need for sustainable approaches to combat environmental deterioration and reduce carbon emissions. This literature study explores the connection between mitigating carbon emissions and sustainable environmental management in the aftermath of the COVID-19 epidemic, drawing on numerous studies from Scopus-indexed publications.

> "*The COVID-19 pandemic has brought attention to how important it is to reduce carbon emissions through sustainable environmental management practices.*"

The COVID-19 pandemic has brought attention to how important it is to reduce carbon emissions through sustainable environmental management practices. By applying green energy techniques, circular economy concepts, and strong environmental, social, and governance (ESG) frameworks, businesses and governments can successfully lessen their environmental effects and advance sustainability. Research and policy development must continue to support these initiatives and ensure a strong and long-lasting future (Teoh et al. 2022; Faeni et al. 2023). Therefore, the COVID-19 pandemic has led to a renewed focus on the application of sustainable environmental management strategies to ensure the ecosystem's resilience and long-term health. The research also highlighted how the circular economy could potentially address sustainability issues that the pandemic has exacerbated. The research determined that digitalization, sustainable supply chain management, and waste management are crucial areas of focus for advancing the circular economy and reducing carbon emissions. Thus, emphasize the necessity of finding sustainable energy solutions in the wake of the COVID-19 outbreak. Reducing carbon emissions and delaying the rate of environmental deterioration require the use of renewable energy sources and increased energy efficiency. We examined how ESG performance increased after the COVID-19 epidemic. Companies with strong ESG practices were better equipped to handle the challenges presented by the pandemic and significantly lower carbon emissions through sustainable activities (Tripopsakul and Puriwat 2022). Therefore, the countrywide lockdowns brought

EXHIBIT 1 | CSR implementation according to ISO 26000. *Source:* ISO 26000. [Color figures can be viewed at wileyonlinelibrary.com.]

on an extraordinary economic slump, severely impacting the transportation industry. Due to the severe and challenging economic circumstances, numerous transportation industries stopped implementing CSR, which led to a significant increase in carbon emissions. The objective of these various CSR practices for transportation industries post-Covid-19 was to continue sustainable environmental management toward carbon emission reduction. CSR significantly impacts the environmental performance of major transportation industries. CSR and eco-friendly policies and practices demonstrate a positive relationship. Green innovation and environmental strategies significantly improve environmental performance. To reduce carbon emissions, CSR is better implemented after COVID-19 and affects environmental strategy, green innovation, and environmental performance.

The ISO 26000 quality standard, which focuses on seven aspects, guides the implementation and management activities of a sustainable CSR program. (a) Organizational governance. It concentrates on the execution of governance, encompassing the identification, formulation, and execution of strategic choices to guarantee the successful application of social responsibility principles; additionally, it addresses human rights. The implementation of CSR activities prioritizes the fulfillment of basic human rights, particularly for all employees as stakeholders, encompassing civil, economic, social, cultural, and political rights (Sharma, Sakhuja, and Nijjer 2022). However, the implementation of CSR activities prioritizes fulfilling responsibilities related to employment policies and practices while focusing on general aspects of employment. (b) Environment: moreover, the implementation of CSR activities centers on fulfilling responsibilities for business processes and operations that have an environmental impact on society, particularly in the company's immediate vicinity; (c) promoting fair operating practices (Riyadh, Garad, and Al-Shmam 2024): the company implements CSR activities to uphold ethical and fair commitments and interactions with stakeholders while also addressing consumer issues (see **Exhibit 1**).

The implementation of CSR activities prioritizes the fulfillment of consumer rights related to products and services, including fair treatment and clear information, as well as community involvement and development. The implementation of CSR activities centers on the relationship and interaction between the company and the community surrounding its operational area, as expressed by the following informant: "With GHRM, there is a shift in mindset in managing the CSR program." The change in mindset is changing normal behavior into green behavior or pro-environment employees in all activities in the development, implementation, and systems that run according to ISO environment in the transportation industry for reducing carbon emissions. Along with the seven responsibilities outlined in the ISO 26000 quality standard, the following principles serve as a foundation for the company's decision-making and management policies: (a) Adherence to legal requirements; (b) Deference to international governing bodies and instruments; (c) Consideration of stakeholders and their interests; (d) Responsibility; (e) Openness; (f) Moral conduct in business; (g) Precautionary measures; (h) Fundamental human rights respect. Indonesia, a transportation service company with a core focus on sustainability and environmental preservation, implements GHRM and sets environmental CSR targets for general transportation. Currently, emissions from the transportation sector are among the top three. This paper examined the transportation sectors of Indonesia during the early and late phases of the economic new normal using the input-output technique, energy consumption method, and extended structural decomposition model. This paper examines the status of carbon emissions in Indonesia and the impact of reducing them. The last demand impact, which led to rising transportation-related carbon emissions, was a major factor in the early and late stages of the new economic normal. The paper provided a theoretical framework for controlling carbon emissions in the transportation sector and practical suggestions for how the sector could respond to changes in energy demand and industrial output by reducing emission levels more precisely, all considering the "new normal" in China's economy. Based on the above arguments, this study proposes the research model in **Exhibit 2** and the following hypotheses:

H5: *Post-COVID-19 positivity on CSR Implementation in Transportation Industry*.

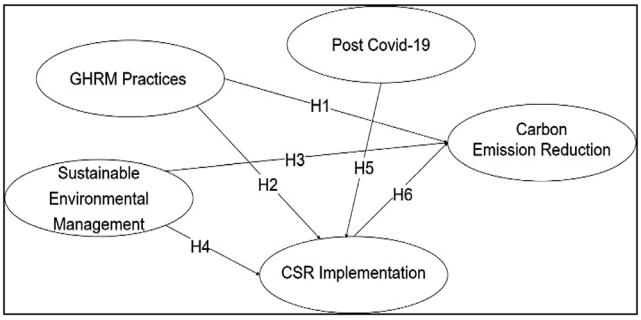

EXHIBIT 2 | Research model. *Source:* Primary data, 2024.

H6: *The implementation of CSR has a positive effect on reducing carbon emissions in the transportation industry.*

3 | Research Design

The GHRM practices, carbon emissions, CSR implementation, post-COVID-19, and sustainable environment management were the subjects of the study, which employed structural equation modeling (SEM). The study employed a quantitative methodology and collected data in Jakarta, the capital city of Indonesia, using Google Form surveys. Ten80 provided a response to a question about the level of environmental consciousness among those who work in public transportation. The updated survey was based on a tool that academics had previously developed (Randall and Gibson 1990). Four sections made up the text. We requested a brief biography from each respondent in the initial section of the study. The second section assessed CSR initiatives, sustainable environmental management, and the period following COVID-19 using two adjusted dimensions: GHRM practices. Depending on the tool, the third part divided the focus on reducing carbon emissions into two parts: regulation and diffusion. We assessed the issue using a 5-point Likert scale, where one signified strong disagreement and five represented strong agreement. We obtained around 1450 respondents from employees working in different transportation industries. Three hundred employees responded, while 370 did not complete the survey, resulting in a final version that included 1080 responses. The questionnaire was translated into Indonesian to facilitate understanding for respondents whose first language is not Indonesian, and then we carried out an SEM procedure involving data entry in SmartPLS.

3.1 | Data Collection

One indicates significant disagreement, and five indicates agreement on a 5-point Likert scale. This poll uses a 5-point Likert scale (very disagree, disagree, agree, and strongly agree) to gauge the extent to which respondents agree with the assertions. We disseminated this digital survey through various social media platforms from January through August of 2024. We received 1080 responses. More specifically, male respondents made up 35.3% of the total, while female respondents accounted for 64.7%. Respondents aged 30–39 made up 49.1% of the total, those aged 39–49 accounted for 33.1%, and those aged 50 and up represented 17.8%. According to the respondents' level of education, 53.1% have an undergraduate degree and 46.9% have a graduate degree. According to years of service, 45.3% of respondents had 10–15 years of experience, 54.2% had 16–21 years, and 0.5% had 22 years or more, as illustrated in **Exhibit 3**.

3.2 | Ethics Approval

The study obtained written approval by the ethics committee of Management institute of transportation, Jakarta, December 2023.

In the next steps, the authors process and analyze all obtained or collected data by interpreting the existing data and compiling a comprehensive research report. We calculated the number of respondents using the Slovin formula, which included 1080 out of the total employees in the organization. We used SmartPLS to analyze the data for statistical tests of research validation and reliability. We may be able to deduce how GHRM practices impact the decrease of carbon emissions from public transportation workers by investigating the interconnections of the variables within this setting. Following the COVID-19 pandemic, the model integrates a range of sustainable environmental management variables with the goal of reducing carbon emissions through the implementation of CSR.

4 | Results and Discussions

4.1 | Validity Test

Discriminant and convergent validity are two parts of the SmartPLS 4.0 validity test. For exploratory investigations to be considered valid, a loading factor value of 0.5 suffices; however, **Exhibit 4** of the rule of thumb evaluation of the measurement model (outer model) mandates a value exceeding 0.7 for validity. We present an examination of each indication using factor loading.

We assess the test's validity and reliability through this method of measurement. Exhibit 4 demonstrates the high validity of the coefficient values associated with the following GHRM practices: reducing carbon emissions, implementing CSR, post-COVID-19, and sustainable environmental management. The coefficient values for GHRM practices, carbon emission reduction, CSR implementation, post-COVID-19, and sustainable environmental management, which are 0.824, 0.807, 0.740, 0.768, and 0.730, respectively, demonstrate a high level of reliability and are larger than 0.8, indicating favorable results. To be considered valid, the average variance extracted (AVE) value must exceed 0.5.

4.2 | Reliability Test

It was necessary to conduct reliability tests on the data collection instrument to determine its degree of accuracy, precision, stability, and consistency in expressing specific symptoms from a group of patients over several administrations. The consistency of multiple measurements of the same symptom determines the reliability of the measuring equipment. According to the rule of thumb evaluation of the measurement model (outer model), a construct is considered to have adequate reliability if Cronbach's alpha is greater than 0.7 and composite reliability is better than 0.5. According to **Exhibit 5**, all the constructs in this study are reliable because Cronbach's alpha values are larger than 0.7 and composite reliability values are greater than 0.5 for all variables.

EXHIBIT 3 | Data respondents.

Category	Subcategory	Percentage	Number of respondents (out of 1080)
Gender	Male	35.3%	381
	Female	64.7%	699
Age group	30–39	49.1%	530
	40–49	33.1%	357
	50 and above	17.8%	192
Education level	Undergraduate degree	53.1%	574
	Graduate degree	46.9%	506
Years of service	10–15 years	45.3%	489
	16–21 years	54.2%	585
	22 years or more	0.5%	6

EXHIBIT 4 | Validity test (SmartPLS, 2024).

Variable	AVE	Validity
GHRM practices	0.824	Validity
Carbon emission reduction	0.807	Validity
CSR implementation	0.740	Validity
Post-COVID-19	0.768	Validity
Sustainable environment management	0.730	Validity

Source: Data processed using SmartPLS 4.0, 2024.
Abbreviations: CSR, corporate social responsibility; GHRM, green human resource management.

EXHIBIT 5 | Reliability test.

Variable	Cronbach's alpha values	Reliability
GHRM practices	0.949	Reliable
Carbon emission reduction	0.954	Reliable
CSR implementation	0.969	Reliable
Post-COVID-19	0.959	Reliable
Sustainable environment management	0.961	Reliable

Source: Data processed using SmartPLS 4.0, 2024.
Abbreviations: CSR, corporate social responsibility; GHRM, green human resource management.

SmartPLS processed the data to run the SEM. The study employed SEM to examine the relationships between GHRM practices, SEM, and CSR adoption. The outcomes of the SmartPLS examination of the outer model testing in **Exhibit 6** prior to bootstrapping, which aimed to seek validity and reliability among GHRM practices, carbon emission reduction, CSR implementation, post-COVID-19, and sustainable environment management, are displayed in **Exhibit 7**.

4.2.1 | GHRM Practices (X_1)

Exhibit 7 displays the outcomes of the SmartPLS validity of the outer model testing following bootstrapping, which, in turn, displays the findings of the hypothesis test relating GHRM practices to a decrease in carbon emissions. Item $X_{1.1}$ to $X_{1.11}$ has the highest significance, with loading values exceeding 0.8 (Faeni 2024).

4.2.2 | Post-Covid-19 (X_2)

Item indicators $X_{2.1}$ to $X_{2.7}$ demonstrated high factor loadings, mostly above 0.8, indicating that post-Covid-19 has a positive effect and high significance on the latent variables.

4.2.3 | Sustainable Environmental Management (X_3)

Item $X_{3.1}$ to $X_{3.9}$ indicated high factors loadings, mostly exceeding 0.8, except for $X_{3.4}$, which showed a slightly lower loading of 0.357. This could be tested in future research.

4.2.4 | CSR Implementation (Y)

Items $Y_{1.1}$ to $Y_{1.4}$ also indicated loadings higher than 0.8, indicating a positive effect and significant influence toward CSR implementation.

4.2.5 | Carbon Emission Reduction (Z)

Items $Z_{1.1}$ to $Z_{1.5}$ determined very high factor loadings, all exceeding 0.8, indicating that all factors have a very high effect and significant influence toward carbon emission reduction measures.

4.2.6 | CSR Implementation (Y)

An R-squared value of 0.824 in **Exhibit 8** was determined by the data analysis of CSR implementation. This indicates that the endogenous variable of carbon emission reduction can be determined by the exogenous variables of GHRM practices, sustainable environmental management, and post-Covid-19.

EXHIBIT 6 | Outer model evaluation (measurement model).

	Outer loading				Standard value	Conclusion
GHRM practices	0.814				0.8	Valid
	0.895				0.8	Valid
	0.883				0.8	Valid
	0.836				0.8	Valid
	0.866				0.8	Valid
	0.800				0.8	Valid
	0.871				0.8	Valid
	0.874				0.8	Valid
	0.876				0.8	Valid
	0.874				0.8	Valid
	0.870				0.8	Valid
Carbon emission reduction		0.897			0.8	Valid
		0.902			0.8	Valid
		0.883			0.8	Valid
		0.917			0.8	Valid
		0.891			0.8	Valid
CSR implementation			0.906		0.8	Valid
			0.893		0.8	Valid
			0.916		0.8	Valid
			0.916		0.8	Valid
Post-COVID-19				0.875	0.8	Valid
				0.843	0.8	Valid
				0.862	0.8	Valid
				0.884	0.8	Valid
				0.920	0.8	Valid
				0.878	0.8	Valid
				0.871	0.8	Valid
				0.875	0.8	Valid
Sustainable environment management					0.891	0.8	Valid
					0.820	0.8	Valid
					0.857	0.8	Valid
					0.869	0.8	Valid
					0.833	0.8	Valid
					0.820	0.8	Valid
					0.869	0.8	Valid
					0.858	0.8	Valid
					0.872	0.8	Valid

Source: Data processed using SmartPLS 4.0, 2024.
Abbreviations: CSR, corporate social responsibility; GHRM, green human resource management.

4.2.7 | Carbon Emission Reduction (*Z*)

An R^2 of 0.807 indicates that 80.7% of variability in carbon emission reduction can be explained by GHRM practices, sustainable environmental management, post-COVID-19, and CSR implementation. The coefficient of determination came up at 80.7% in the calculations. This indicates that the exogenous variables of GHRM practices, sustainable environmental management, post-COVID-19, and CSR implementation can account for 80.7% of the endogenous variables of carbon emission reduction, with other variables accounting for the remaining 39.7%. CSR implementation mediates an 80.7% relationship between the carbon emission

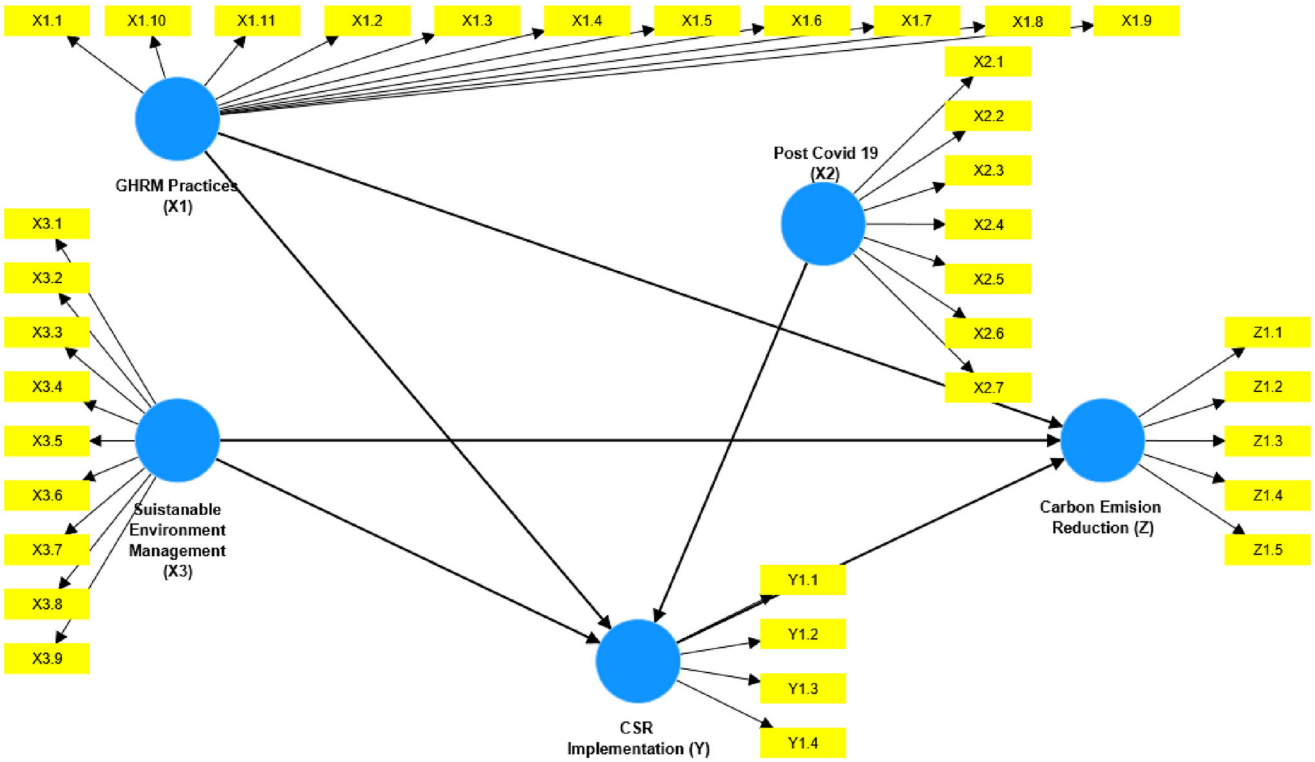

EXHIBIT 7 | Outer model. *Source:* Data processed using SmartPLS 4.0, 2024. [Color figures can be viewed at wileyonlinelibrary.com.]

EXHIBIT 8 | *R*-squared (R^2).

	***R*-square**	***R*-square adjusted**
CSR implementation (*Y*)	0.839	0.834
Carbon emission reduction (*Z*)	0.840	0.835

reduction towards GHRM practices, sustainable environmental management, and post-COVID-19.

Exhibit 9 displayed the *t*-statistic or *p* value test results for each hypothesis. The table also displayed the observed effect and the significance level for each variable. The study used the bootstrapped research model to show the study's two parts—direct and indirect effects—as well as the significance level in the outcomes level test. We used CSR implementation as a mediating variable.

GHRM practices, carbon emission reduction, CSR implementation, post-COVID-19, and sustainable environment management all have values of 0.884, 0.862, 0.869, 0.877, 0.834, and 0.872, respectively, indicating that they are very reliable, as the coefficient value is greater than 0.8 (Exhibit 9). The inner model evaluation's path coefficients serve as a hypothesis test.

Exhibit 10 displays the results of the inner model's SmartPLS analysis after bootstrapping. Here are the findings of a hypothesis test about the relationship between GHRM practices, carbon emission reduction, CSR implementation, and post-COVID-19 sustainability in the environment.

In **Exhibit 11**, the variables *t*-statistics, and *p* value GHRM practices effect employee's carbon emission reduction with a *t*-statistic of 10.666 and a *p* value of 0.028; GHRM practices effect CSR Implementation with a *t*-statistic of 5.998 and a *p* value 0.000; sustainable environmental management effect employee's CSR implementation with a *t*-statistic of 5.926 and a *p* value 0.000; sustainable environmental management effect carbon emission reduction with a *t*-statistic of 9.201 and a *p* value 0.000; post-Covid-19 effect CSR implementation with a *t*-statistic of 8.200 and a *p* value 0.000.

The model fit test in **Exhibit 12**, such as SRMR and NFI, plays a crucial role in evaluating the extent to which a research model can represent actual empirical data. The SRMR value (0.042) indicates that the residuals between the observed covariance matrix and the predicted model are very small, meaning the model demonstrates a *good fit* and that the relationships between variables align well with the data. Meanwhile, the NFI value (0.896), which approaches the threshold of 0.90, suggests that the model is close to achieving optimal fit but still has room for improvement. In this research model, which involves exogenous variables such as GHRM practices, post-Covid-19, and sustainable environment management, with mediation through CSR implementation leading to the endogenous variable carbon emission reduction, the model fit test ensures that the causal relationships between variables are theoretically and empirically valid. The results of the model fit test confirm that the proposed model effectively explains the phenomenon, although further evaluation, such as model modification analysis or improving factor loadings on indicators, can be undertaken to refine data representation and enhance the accuracy of causal relationships.

EXHIBIT 9 | Inner model evaluation (structural model).

Variables	Path coefficients
GHRM practices → Carbon emission reduction	0.884
GHRM practices → CSR implementation	0.862
Sustainable environment management → CSR implementation	0.869
Sustainable environment management → Carbon emission reduction	0.877
Post-COVID-19 → CSR Implementation	0.834
CSR implementation → Carbon emission reduction	0.872

Source: Data processed using SmartPLS 4.0, 2024.
Abbreviations: CSR, corporate social responsibility; GHRM, green human resource management.

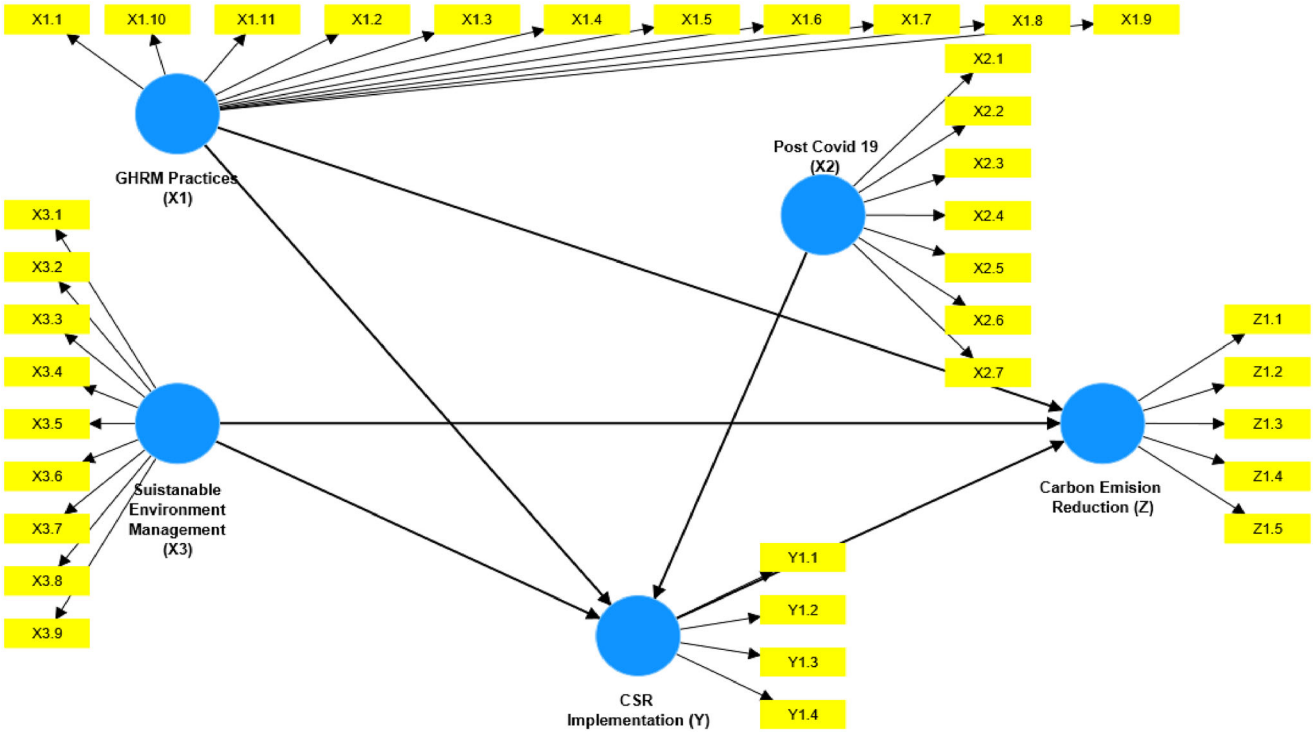

EXHIBIT 10 | Inner model. *Source:* Data processed using SmartPLS 4.0, 2024. [Color figures can be viewed at wileyonlinelibrary.com.]

EXHIBIT 11 | Hypothesis test.

Variables	*t*-statistics	*p* values
GHRM practices	10.666	0.028
Carbon emission reduction	5.998	0.000
CSR implementation	5.926	0.000
Post-Covid-19	9.201	0.000
Sustainable environmental management	8.200	0.000

Source: Data processed using SmartPLS 4.0, 2024.
Abbreviations: CSR, corporate social responsibility; GHRM, green human resource management.

EXHIBIT 12 | Model fit test.

	Estimated model
SRMR	0.042
d_ULS	0.565
d_G	0.505
Chi-square	2236.595
NFI	0.896

Abbreviation: SRMR, standardized root mean square residual.

5 | Discussion

The results of the hypothesis tests confirm significant relationships among GHRM practices, sustainable environmental management, post-COVID-19 effects, CSR implementation, and carbon emission reduction in the transportation industry. Therefore, H1 demonstrates a positive and statistically significant impact of GHRM practices on reducing carbon emissions, with both the *t*-statistic and *p* value falling below the 0.05 significance threshold. A *t*-statistic of 5.998 and a *p* value of 0.000 support

H2, showing that GHRM practices have a positive effect on CSR implementation. This shows that green employee performance helps with CSR efforts. H3 establishes that sustainable environmental management also plays a critical role in reducing carbon emissions, as evidenced by a *t*-statistic of 5.926 and a *p* value of 0.000, indicating a strong positive effect. Moreover, H4 says that sustainable environmental management has an indirect effect on CSR implementation through factors like green pay and employee performance. *t*-statistics greater than 2.005 and *p* values less than 0.05 support this. Additionally, H5 reveals that the post-COVID-19 era has introduced policies that positively influence CSR implementation by promoting eco-consciousness among workers, validated by a *t*-statistic of 9.201 and a *p* value of 0.000. With a *t*-statistic greater than 8.200 and a *p* value of 0.000, H6 confirms that implementing CSR makes a big difference in lowering carbon emissions. This shows that CSR measures can help the environment and create long-lasting results in the transportation industry. These findings collectively underscore the interconnected roles of GHRM, sustainable management practices, and CSR efforts in fostering sustainability and emission reduction in the transportation sector.

> *"These findings collectively underscore the interconnected roles of GHRM, sustainable management practices, and CSR efforts in fostering sustainability and emission reduction in the transportation sector."*

This model shows that latent variables measured by related indicators have a strong and significant relationship. GHRM practices, sustainable environmental management, and the impact of post-Covid-19 have all significantly contributed to CSR implementation, which in turn also has a significant impact on reducing carbon emissions. Furthermore, we can use this model to empirically demonstrate the critical role of GHRM practices and sustainable environmental management in driving CSR implementation and achieving carbon emission reduction, particularly in the post-Covid-19 pandemic context. However, one of GHRM's roles in sustainable business strategy is to create environmentally friendly human resources that may positively impact and affect both financial performance and human resource performance. Through the provision of environmental problem-solving strategies, sustainable GHRM plays a critical and strategic role in motivating all members of the organization, including stakeholders, to work together hand in hand. Experts believe that GHRM procedures are effective in instilling in workers a sense of accountability and responsibility for upholding a clean, unpolluted environment. GHRM procedures serve as a plan for sustainable environmental management, aimed at averting catastrophic actions that could destroy the earth. The research's conclusions highlighted these viewpoints heavily. With the ultimate goal of enhancing the organization's environmental performance to reap financial and market benefits, GHRM practices and policies indirectly influenced bonuses and incentives, encouraging all members to fully support various CSR implementations, innovations, and ideas (Faheem et al. 2024; Jia et al. 2018; Faeni 2024; Mittal 2023; Song, Yu, and Xu 2020).

Moreover, the advent of the global pandemic has precipitated substantial alterations in the practices of GHRM and CSR within the transportation industry, many of which have enduring ramifications. The advent of remote working and telecommuting, accelerated by the pandemic, proved to be a pivotal factor in the transformation of GHRM strategies. To align their practices with sustainability goals, companies adopted digital collaboration tools and flexible work policies, thereby reducing their reliance on physical office spaces and daily commuting. Furthermore, organizations promoted the implementation of energy-efficient home office setups and provided virtual training programs with a focus on sustainability awareness, thereby fostering a green culture even in remote environments. These changes have resulted in the implementation of hybrid work models that continue to facilitate GHRM objectives by minimizing environmental impact and promoting employee well-being. In terms of CSR, the pandemic prompted a shift in focus toward initiatives aimed at promoting health and well-being. This included the provision of personal protective equipment (PPE), support for vaccination campaigns, and assistance to local communities through the provision of transportation services for essential workers and food distribution efforts. In terms of environmental impact, many companies adopted digital solutions, such as paperless policies, and implemented green transportation initiatives, including the adoption of electric vehicles and optimization of logistics to reduce costs and emissions. As the pandemic recedes, these adaptations have left a lasting legacy. The digital transformation of CSR efforts and a commitment to sustainability, which have become permanent features, have reinforced the centrality of health and community well-being to CSR agendas. The pandemic has redefined GHRM and CSR practices in the transportation industry, embedding flexibility, digital innovation, and environmental responsibility into their long-term strategies. The pandemic has catalyzed a transformation in GHRM and CSR practices, forcing the transportation industry to adapt to new challenges.

> *"The pandemic has catalyzed a transformation in GHRM and CSR practices, forcing the transportation industry to adapt to new challenges."*

The role of literature analysis in this research was pivotal in framing the hypotheses. A comprehensive review of prior studies helped identify gaps and theoretical inconsistencies related to GHRM, CSR, and carbon emissions. For example, studies by Alhan (2022) highlighted the importance of green HR activities to manage carbon emissions but did not consider CSR. This guided the formulation of hypotheses to address these gaps. Moreover, literature analysis provided a theoretical foundation, ensuring the hypotheses aligned with established frameworks like RBV theory and green behavior theory. This approach ensures the hypotheses are both grounded in existing knowledge and aimed at extending the understanding of GHRM and CSR in reducing carbon emissions for sustainable practices. Moreover, nowadays, companies are beginning to consider contributing to the social and ecological environment, in addition to maximizing profits. The company's management system undergoes a transformation through the application of GHRM concepts. The expected transformation involves human resources or employees exhibiting positive behavior towards the environment and participating in environmental conservation efforts (Jia et al. 2018; Faeni 2024). Moreover, the deployment of GHRM practices, which integrate sustainability and environmental management, has a significant impact on the organization. In addition to reaping the benefits

of this concept, the company actively contributes to environmental protection, boosts productivity, fosters employee welfare, encourages creativity and behavior change, strikes a balance between environmental protection and financial performance, and cultivates a positive image. The company fosters loyalty and gains a competitive edge by cutting down on natural resource consumption, pollution, and environmental degradation. They also construct a green work environment, lower CO2, and encourage a green culture and lifestyle in society. Finally, the study's conclusions highlighted the potential connections between GHRM and CSR practices since the former encourages employees to adopt a more environmentally conscious lifestyle and recognizes the significance of fostering a healthier environment through ongoing sustainable environmental management. GHRM and CSR implementation motivate employees to be involved in preserving the environment for the purpose of the organization's sustainability. CSR implementation mitigates adverse environmental impacts with innovation and environmentally friendly acts that create incentives. Therefore, this study fills a gap in current research by emphasizing that businesses must implement sustainable supply chain strategies to achieve sustainability and reduce their adverse environmental impacts. The implementation of sustainable environmental management is essential for achieving long-term environmental sustainability and minimizing carbon emissions. Organizations can significantly reduce their environmental impact by implementing strategies such as resource efficiency, pollution prevention, and the utilization of renewable energy. The successful implementation of sustainable environmental management necessitates addressing two primary challenges: fiscal constraints and regulatory concerns (Rejeb et al. 2022; Lăzăroiu et al. 2020; Torres de Oliveira, Ghobakhloo, and Figueira 2023). Furthermore, reductions in the carbon intensity of the transportation sector are essential for sustainable management practices. This study focuses on environmentally sensitive management strategies. The findings indicate that CSR significantly influences environmental performance. The positive relationship between CSR, environmental strategy, and green innovation enhances environmental performance. These elements are essential for connecting CSR with reduced carbon emissions. GMs of large manufacturing companies can use this to strengthen internal resources, such as green innovation, environmental strategy, and CSR, all of which contribute to improved environmental performance.

6 | Conclusion

The research findings summarize the correlation between GHRM practices and carbon emission reduction in the following way: first, enhanced environmental performance: GHRM practices, such as performance management, training, and green recruitment, significantly improve an organization's environmental performance. These policies and procedures inspire workers to make positive changes for the environment through their actions and ideas. Second, reduction in carbon emissions: integrating eco-friendly policies into HR procedures can lessen a company's environmental impact. This includes advocating for sustainable transportation options, trash reduction strategies, and energy-efficient technology. Third, post-COVID-19 Adaptations: Because telecommuting eliminates the need for daily travel, it has sped up the adoption of flexible work arrangements, which in turn reduces carbon emissions. Fourth, sustainable environment management: businesses that apply GHRM techniques get a competitive advantage in addition to improving their environmental sustainability. GHRM techniques enhance operational effectiveness and cultivate a positive company reputation. Sixth, Long-term Sustainability: By encouraging a culture of sustainability inside businesses, GHRM policies guarantee a sustained dedication to environmental objectives. By balancing economic goals with environmental obligations, this all-encompassing strategy benefits the environment and the company. In conclusion, GHRM strategies are crucial to Indonesia's efforts to stop climate change and promote sustainable environmental management, especially during the post-COVID-19 period when CSR implementation is possible. By implementing these strategies, businesses can preserve their operational effectiveness and competitive edge while still meeting their environmental goals.

> "*By implementing these strategies, businesses can preserve their operational effectiveness and competitive edge while still meeting their environmental goals.*"

Currently, GHRM methods are assisting in changing employee behavior to include more environmentally friendly acts on a global basis. Tree planting, mangrove preservation, community empowerment through tourist villages and hydroponic villages, and other CSR activities are examples of environmental management programs that have led to visible transformation. The company's leadership is committed to minimizing negative effects on the environment and has implemented measures such as paperless policies, reduced plastic use, and improved trash sorting systems, as well as the idea of a "green station" at all stations throughout Indonesia. By providing a reward scheme to employees who continuously make contributions to environmental management, this policy aims to foster a green culture. The inadequacy of interview data collected during the COVID-19 epidemic renders this study lacking in primary data. Furthermore, this study failed to identify and quantify GHRM practices that influence carbon emission reduction through CSR adoption. Changing the paradigm of corporate thinking that implements GHRM practices can achieve carbon emission reduction. GHRM practices encourage all employees and the surrounding environment to establish sustainable environmental management to reduce carbon emissions. Following the COVID-19 pandemic, there has been a surge in efforts to enhance carbon emission reduction activities through the implementation of CSR.

7 | Study Implications and Future Research

7.1 | Strategic Implications for the Transportation Industry

First, the integration of GHRM and CSR is crucial for achieving sustainability goals. The study indicates that adopting GHRM and CSR practices leads to more environmentally conscious behavior among employees. Transportation companies can leverage these approaches not only for compliance with environmental regulations but also to foster sustainable innovation. Second, operational shifts: external factors, such as COVID-19, have accelerated an operational transformation, as evidenced by the

emphasis on policies such as paperless systems and green transportation. This offers an actionable roadmap for other companies to embed sustainable practices into core operations.

7.2 | Policy Implications

First, we support green policy initiatives. Our findings suggest that environmental initiatives, such as renewable energy and community empowerment, yield positive outcomes. This reinforces the case for public policies that incentivize companies to adopt green HRM and CSR. Second, companies can encourage employee recognition programs by creating frameworks that reward staff involved in sustainable activities, such as reducing carbon emissions or promoting waste management. This aligns individual motivation with corporate environmental objectives.

7.3 | Theoretical Implications

First, contributions to sustainability theory: this study highlights the role of GHRM in shifting employees' mindsets toward sustainability. This adds to the existing body of knowledge by demonstrating how internal organizational policies, such as GHRM, interact with external CSR initiatives to achieve environmental outcomes. Second, interdisciplinary insight: your research bridges HR management, environmental science, and corporate responsibility, reinforcing the importance of multidisciplinary approaches to solving sustainability challenges.

7.4 | Practical Implications for Management

First, embedding green culture in the workforce: HR departments need to design continuous training programs and incentives to maintain a green culture within the organization. This can involve aligning KPIs with sustainability targets and recognizing employee contributions toward carbon reduction. Second, adopting the 3R model and green concepts is crucial. Companies should integrate practices such as reduce-reuse-recycle (3R) and green transportation into everyday operations. Beyond tree-planting campaigns, companies could explore sustainable logistics models, such as electric fleets or shared transportation.

> "*Beyond tree-planting campaigns, companies could explore sustainable logistics models, such as electric fleets or shared transportation.*"

7.5 | Limitations and Future Research

The researchers speculated in the study that there could be a potential methodological bias, which may be due to the focus on transportation industry employees, who may not accurately reflect generalizability, or even CSR employees, who may have a more favorable perception of the effectiveness of GHRM and CSR initiatives. However, the study has limitations and suggests future research. Longitudinal studies on the long-term effects of these strategies on carbon emissions and organizational performance could help determine their applicability. It might also be helpful to investigate other industries and see the direct, measurable effect that GHRM and CSR efforts have on lowering emissions. Future research could also explore the long-term effects of these strategies on other sectors and examine the direct quantitative impact of GHRM and CSR efforts on emissions reduction.

Consent

The consent to participate statement informed that written consent for data collection was obtained from all individual participants included in the study.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

References

Ababneh, O. M. A. 2021. "How Do Green HRM Practices Affect Employees' Green Behaviors? The Role of Employee Engagement and Personality Attributes." *Journal of Environmental Planning and Management* 64, no. 7: 1204–1226. https://doi.org/10.1080/09640568.2020.1814708.

Aboramadan, M. 2022. "The Effect of Green HRM on Employee Green Behaviors in Higher Education: The Mediating Mechanism of Green Work Engagement." *International Journal of Organizational Analysis* 30, no. 1: 7–23. https://doi.org/10.1108/IJOA-05-2020-2190.

Aftab, J., N. Abid, N. Cucari, and M. Savastano. 2022. "Green Human Resource Management and Environmental Performance: The Role of Green Innovation and Environmental Strategy in a Developing Country." *Business Strategy and the Environment* 32, no. 4: 1782–1798. https://doi.org/10.1002/bse.3219.

Al-Ansi, A. M., M. Hazaimeh, A. Hendi, J. Al-Hrinat, G. Adwan, and A. Garad. 2023. "Innovative Responses to Exogenous Shocks in Indonesian Transportation Firms: Mediating Role of Sustainable Performance and Outcomes." *International Journal of Sustainable Development and Planning* 18, no. 09: 2663–2672. https://doi.org/10.18280/ijsdp.180905.

Alhan, O. 2022. "The Importance of Green HR Activities to Manage Carbon Emission Problem." In *Clean Energy Investments for Zero Emission Projects: Contributions to Management Science*, edited by H. Dinçer and S. Yüksel. Cham, Switzerland: Springer. https://doi.org/10.1007/978-3-031-12958-2_3.

AlKetbi, A., and J. Rice. 2024. "The Impact of Green Human Resource Management Practices on Employees, Clients, and Organizational Performance: A Literature Review." *Administrative Sciences* 14, no. 4: 78. https://doi.org/10.3390/admsci14040078.

Awain, A. M. S. B., A. M. Al-Ansi, and M. Jaboob. 2023. "Green Supply Chain Management: A Comprehensive Review of Research, Applications and Future Directions." *Management and Production Engineering Review* 14, no. 3: 118–133. https://doi.org/10.24425/mper.2023.147194.

Barney, J. 1991. "Firm Resources and Sustained Competitive Advantage." *Journal of Management* 17, no. 1: 99–120. https://doi.org/10.1177/014920639101700108.

Benevene, P., and I. Buonomo. 2020. "Green Human Resource Management: An Evidence-Based Systematic Literature Review." *Sustainability* 12, no. 15: 5974. https://doi.org/10.3390/su12155974.

Chaudhary, R. 2020. "Green Human Resource Management and Employee Green Behavior: An Empirical Analysis." *Corporate Social Responsibility and Environmental Management* 27, no. 2: 630–641. https://doi.org/10.1002/csr.1827.

Chen, C., and W. Liu. 2023. "Advances and Future Trends in Research on Carbon Emissions Reduction in China From the Perspective of Bibliometrics." *PLoS ONE* 18, no. 7: e0288661. https://doi.org/10.1371/journal.pone.0288661.

Chen, L., L. Zhang, J. Huang, et al. 2021. "Social Responsibility Portfolio Optimization Incorporating ESG Criteria." *Journal of Management Science and Engineering* 6, no. 1: 75–85. https://doi.org/10.1016/j.jmse.2021.02.005.

Chen, T., S. Hao, K. Ding, et al. 2020. "The Impact of Organizational Support on Employee Performance." *Employee Relations: The International Journal* 42, no. 1: 166–179. https://doi.org/10.1108/er-01-2019-0079.

Dong, K., H.-D. Jiang, R. Sun, and X. Dong. 2018. "Driving Forces and Mitigation Potential of Global CO2 Emissions From 1980 Through 2030: Evidence From Countries With Different Income Levels." *Science of the Total Environment* 649: 335–343. http://doi.org/10.1016/j.scitotenv.2018.08.326.

Dumont, J., J. Shen, and X. Deng. 2017. "Effects of Green HRM Practices on Employee Workplace Green Behavior: The Role of Psychological Green Climate and Employee Green Values." *Human Resource Management* 56, no. 4: 613–627. https://doi.org/10.1002/hrm.21792.

Faeni, D. 2024. "Green Practices and Employees' Performance: The Mediating Roles of Green Human Resources Management Policies and Knowledge Development." *Journal of Infrastructure, Policy and Development* 8, no. 8: 4924. http://doi.org/10.24294/jipd.v8i8.4924.

Faeni, D. P., R. Puspitaningtyas Faeni, H. Alden Riyadh, and Y. Yuliansyah. 2023. "The COVID-19 Pandemic Impact on the Global Tourism Industry SMEs: A Human Capital Development Perspective." *Review of International Business and Strategy* 33, no. 2: 317–327. https://doi.org/10.1108/RIBS-08-2021-0116.

Faheem, A., Z. Nawaz, M. Ahmed, H. Haddad, and N. M. Al-Ramahi. 2024. "Past Trends and Future Directions in Green Human Resource Management and Green Innovation: A Bibliometric Analysis." *Sustainability (Switzerland)* 16, no. 1: 133. https://doi.org/10.3390/su16010133.

Faisal, S. 2023. "Green Human Resource Management—A Synthesis." *Sustainability* 15, no. 3: 2259. https://doi.org/10.3390/su15032259.

Fawehinmi, O., M. Y. Yusliza, W. Z. W. Kasim, Z. Mohamad, and M. A. Sofian Abdul Halim. 2020. "Exploring the Interplay of Green Human Resource Management, Employee Green Behavior, and Personal Moral Norms." *SAGE Open* 10, no. 4: 1–18. https://doi.org/10.1177/2158244020982292.

Gao, M., K. Knobelspiesse, B. Franz, et al. 2022. "Effective Uncertainty Quantification for Multi-Angle Polarimetric Aerosol Remote Sensing Over Ocean, Part 1: Performance Evaluation and Speed Improvement." *Atmospheric Measurement Techniques* 15, no. 16: 4859–4879. http://doi.org/10.5194/amt-15-4859-2022.

He, R., and X. Wang. 2023. "Enhancing Industrial Environmental Performance: Interplay Among Environmental Sustainability, Green HRM, and Green Competitive Advantage." *Environmental Science and Pollution Research* 30: 103073–103086. https://doi.org/10.1007/s11356-023-29513-6.

Jabbour, C. J. C., F. C. A. Santos, and M. S. Nagano. 2010. "Contributions of HRM Throughout the Stages of Environmental Management: Methodological Triangulation Applied to Companies in Brazil." *International Journal of Human Resource Management* 21, no. 7: 1049–1089. https://doi.org/10.1080/09585191003783512.

Jia, J., H. Liu, T. Chin, and D. Hu. 2018. "The Continuous Mediating Effects of GHRM on Employees' Green Passion Via Transformational Leadership and Green Creativity." *Sustainability (Switzerland)* 10, no. 9: 3237. https://doi.org/10.3390/su10093237.

Jin, Z., J. Wang, M. Yang, and Z. Tang. 2022. "The Effects of Participation in Global Value Chains on Energy Intensity: Evidence From International Industry-Level Decomposition." *Energy Strategy Reviews* 39: 100780. https://doi.org/10.1016/j.esr.2021.100780.

Jin, Z.-D., H.-B. Duan, J.-C. Wang, et al. 2022. "Heterogeneous Impacts of GVCs Participation on CO2 Intensity: Evidence From Developed and Developing Countries/Regions." *Advances in Climate Change Research* 13: 187–195. https://doi.org/10.1016/j.accre.2022.01.002.

Khan, M. H., and S. N. Muktar. 2021. "What's Next for Green Human Resource Management: Insights and Trends for Sustainable Development." *International Journal of Sustainable Development and Planning* 16, no. 1: 181–194. https://doi.org/10.18280/ijsdp.160119.

Kim, T. T., W. G. Kim, S. Majeed, and K. Haldorai. 2023. "Does Green Human Resource Management Lead to a Green Competitive Advantage? A Sequential Mediation Model With Three Mediators." *International Journal of Hospitality Management* 111: 103486. https://doi.org/10.1016/j.ijhm.2023.103486.

Laporan Tahunan OJK. 2022. Retrieved from https://ojk.go.id/id/data-dan-statistik/laporan-tahunan/Pages/Laporan-Tahunan-OJK-2022.aspx.

Lăzăroiu, G., O. Neguriță, I. Grecu, G. Grecu, and P. C. Mitran. 2020. "Consumers' Decision-Making Process on Social Commerce Platforms: Online Trust, Perceived Risk, and Purchase Intentions." *Frontiers in Psychology* 11: 890. https://doi.org/10.3389/fpsyg.2020.00890.

Lenart-Gansiniec, R., B. A. Sypniewska, and J. Chen. 2023. "Innovation-Driven Human Resource Management Practices: A Systematic Review, Integrative Framework, and Future Research Directions." *Journal of Entrepreneurship, Management and Innovation* 19, no. 2: 7–56. https://doi.org/10.7341/2023192.

Li, X., C. Wang, X. Zhang, and W. Zhang. 2019. "China's Pathway to a Low Carbon Economy." *Carbon Balance and Management* 14, no. 1: 1–11.

Mittal, E. 2023. "GHRM Practices and Employee Retention in the IT Sector: Parallel Mediation Approach." *Prajnan* 52, no. 2: 156–178.

Mohammad, W. M. W., and S. Wasiuzzaman. 2021. "Environmental, Social and Governance (ESG) Disclosure, Competitive Advantage and Performance of Firms in Malaysia." *Cleaner Environmental Systems* 2: 100015. https://doi.org/10.1016/j.cesys.2021.100015.

Naz, S., S. Jamshed, Q. A. Nisar, and N. Nasir. 2023. "Green HRM, Psychological Green Climate and Proenvironmental Behaviors: An Efficacious Drive Towards Environmental Performance in China." *Current Psychology* 42, no. 2: 1346–1361. https://doi.org/10.1007/s12144-021-01412-4.

Nekhili, M., A. Boukadhaba, H. Nagati, et al. 2021. "ESG Performance and Market Value: The Moderating Role of Employee Board Representation." *International Journal of Human Resource Management* 32, no. 14: 3061–3087. https://doi.org/10.1080/09585192.2019.1629989.

Ojo, A. O., C. N.-L. Tan, and M. Alias. 2022. "Linking Green HRM Practices to Environmental Performance Through Pro-Environment Behaviour in the Information Technology Sector." *Social Responsibility Journal* 18, no. 1: 1–18. https://doi.org/10.1108/SRJ-12-2019-0403.

Ozdemir, S., J. C. F. De Arroyabe, V. Sena, and S. Gupta. 2023. "Stakeholder Diversity and Collaborative Innovation: Integrating the Resource-Based View With Stakeholder Theory." *Journal of Business Research* 164: 113955. https://doi.org/10.1016/j.jbusres.2023.113955.

Peccei, R., and K. Van De Voorde. 2019. "Human Resource Management–Well-Being–Performance Research Revisited: Past, Present, and Future." *Human Resource Management Journal* 29, no. 4: 539–563. https://doi.org/10.1111/1748-8583.12254.

Pereira, V., and U. Bamel. 2021. "Extending the Resource and Knowledge Based View: A Critical Analysis Into Its Theoretical Evolution and Future Research Directions." *Journal of Business Research* 132: 557–570. https://doi.org/10.1016/j.jbusres.2021.04.021.

Pham, N. T., H. T. Hoang, and Q. P. T. Phan. 2020. "Green Human Resource Management: A Comprehensive Review and Future Research Agenda." *International Journal of Manpower* 41, no. 7: 845–878. https://doi.org/10.1108/IJM-07-2019-0350.

Prabha, D., and M. A. Raajarajeswari. 2024. "Exploring Sustainable Green HRM Practices: An Investigation of Employee Perspectives and Organizational Challenges." In *Information and Communication Technology*

in Technical and Vocational Education and Training for Sustainable and Equal Opportunity. Technical and Vocational Education and Training: Issues, Concerns and Prospects, edited by R. Khamis Hamdan, A. Hamdan, B. Alareeni, and R. E. Khoury. Singapore: Springer. https://doi.org/10.1007/978-981-99-7798-7_25.

Randall, D. M., and A. M. Gibson. 1990. "Methodology in Business Ethics Research: A Review and Critical Assessment." *Journal of Business Ethics* 9, no. 6: 457–471. https://doi.org/10.1007/bf00382838.

Rawashdeh, A. M. 2018. "The Impact of Green Human Resource Management on Organizational Environmental Performance in Jordanian Health Service Organizations." *Management Science Letters* 8, no. 10: 1049–1058. https://doi.org/10.5267/j.msl.2018.7.006.

Rejeb, A., K. Rejeb, S. H. M. Zailani, and A. Abdollahi. 2022. "Knowledge Diffusion of the Internet of Things (IoT): A Main Path Analysis." *Wireless Personal Communications* 126, no. 2: 1177–1207. http://doi.org/10.1007/s11277-022-09787-8.

Ren, S., G. Tang, and S. E. Jackson. 2017. "Green Human Resource Management Research in Emergence: A Review and Future Directions." *Asia Pacific Journal of Management* 35, no. 3: 769–803.

Riyadh, H. A., A. Garad, and M. A. Al-Shmam. 2024. "A Critical Overview of 'the Good,' 'the Bad,' and 'the Ugly' in CSR Contemporary Business Landscapes." In *Impact of Corporate Social Responsibility on Employee Wellbeing*, edited by E. Shaikh, 1–30. New York: IGI Global. https://doi.org/10.4018/979-8-3693-3470-6.ch001.

Rubel, M. R. B., D. M. H. Kee, M. Y. Yusliza, et al. 2023. "Socially Responsible HRM and Hotel Employees' environmental Performance: The Mediating Roles of Green Knowledge Sharing and Environmental Commitment." *International Journal of Contemporary Hospitality Management* 35, no. 7: 2645–2664. https://doi.org/10.1108/ijchm-01-2022-0098.

Shaban, S. 2019. "Reviewing the Concept of Green HRM (GHRM) and Its Application Practices (Green Staffing) With Suggested Research Agenda: A Review From Literature Background and Testing Construction Perspective." *International Business Research* 12, no. 5: 86. https://doi.org/10.5539/ibr.v12n5p86.

Shafaei, A., M. Nejati, and Y. Mohd Yusoff. 2020. "Green Human Resource Management." *International Journal of Manpower* 41, no. 7: 1041–1060. https://doi.org/10.1108/ijm-08-2019-0406.

Sharma, C., S. Sakhuja, and S. Nijjer. 2022. "Recent Trends of Green Human Resource Management: Text Mining and Network Analysis." *Environmental Science and Pollution Research* 29: 84916–84935. https://doi.org/10.1007/s11356-022-21471-9.

Shoaib, M., Z. Abbas, M. Yousaf, R. Zámečník, J. Ahmed, and S. Saqib. 2021. "The Role of GHRM Practices Towards Organizational Commitment: A Mediation Analysis of Green Human Capital." *Cogent Business & Management* 8, no. 1: 1870798. https://doi.org/10.1080/23311975.2020.1870798.

Song, W., H. Yu, and H. Xu. 2020. "Effects of Green Human Resource Management and Managerial Environmental Concern on Green Innovation." *European Journal of Innovation Management* 24, no. 3: 951–967. https://doi.org/10.1108/EJIM-11-2019-0315.

Sult, A., J. Wobst, and R. Lueg. 2024. "The Role of Training in Implementing Corporate Sustainability: A Systematic Literature Review." *Corporate Social Responsibility and Environmental Management* 31, no. 1: 1–30. https://doi.org/10.1002/csr.2560.

Taamneh, M. M., M. Al-Okaily, J. D. Abudoleh, R. Albdareen, and A. M. Taamneh. 2024. "Nexus Between Green Human Resource Management Practices and Corporate Social Responsibility: Does Transformational Leadership Make Difference?" *International Journal of Organizational Analysis* 33, no. 1: 1–24. https://doi.org/10.1108/IJOA-08-2023-3903.

Teoh, S. H., J. Yan, A. Yoon, et al. 2022. "ESG and Shareholder Value: The Role of Board Facial Impressions and Perceived Trustworthiness." *SSRN Electronic Journal* 00: 00. https://doi.org/10.2139/ssrn.4273360.

Torres de Oliveira, R., M. Ghobakhloo, and S. Figueira. 2023. "Industry 4.0 Towards Social and Environmental Sustainability in Multinationals: Enabling Circular Economy, Organizational Social Practices, and Corporate Purpose." *Journal of Cleaner Production* 430, no. 3: 139712. https://doi.org/10.1016/j.jclepro.2023.139712.

Tripopsakul, S., and W. Puriwat. 2022. "Understanding the Impact of ESG on Brand Trust and Customer Engagement." *Journal of Human, Earth, and Future* 3, no. 4: 430–440. https://doi.org/10.28991/hef-2022-03-04-03.

Xie, H., and T. C. Lau. 2023. "Evidence-Based Green Human Resource Management: A Systematic Literature Review." *Sustainability* 15, no. 14: 10941. https://doi.org/10.3390/su151410941.

Zahrani, A. A. 2024. "The Influence of Green human Resource Management Practices on Organizational Environmental Performance: Mediating Roles of Green Innovation and Employee Performance." *Cogent Business & Management* 11, no. 1: 2387378. https://doi.org/10.1080/23311975.2024.2387378.

Zaid, A., and A. Jaaron. 2023. "The Impact of Green Human Resource Management Practices With Sustainable and Operational Performance: A Conceptual Model." In *Innovation of Businesses, and Digitalization During Covid-19 Pandemic*, edited by B. Alareeni and A. Hamdan. Cham, Switzerland: Springer. https://doi.org/10.1007/978-3-031-08090-6_37.