

ORIGINAL

## Exploring the Influence of Green Human Resource Management on Risk Management: The Mediating Effect of Agile Leadership

### Explorando la influencia de la gestión verde de recursos humanos en la gestión de riesgos: el efecto mediador del liderazgo ágil

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#### ABSTRACT

This study explores the relationship between Green Human Resource Management (GHRM) practices, agile leadership, and organizational risk management. The study collected data from 501 managers in 130 businesses registered on the Amman Stock Exchange in Jordan. It used a questionnaire to gather information on their organization's GHRM practices, agile leadership style, and risk management strategies. SPSS and Amos were used to analyze the data. The results show that GHRM practices positively impact risk management, supporting previous research on the influence of GHRM on fostering sustainable practices in organizations. Furthermore, the study finds that the agile leadership style moderates the relationship between GHRM practices and risk management, highlighting the importance of leadership in increasing the efficiency of sustainable practices in organizations. The findings have implications for managers and policymakers, emphasizing the need for organizations to prioritize GHRM practices and cultivate agile leadership to improve their risk management strategies, expand their innovation skills, and encourage sustainable practices. Policymakers can also use the results to support sustainability efforts and urge businesses to follow good governance and risk management practices. The findings show the significance of agile leadership as a mediating variable and emphasize the relevance of organizations prioritizing GHRM practices to achieve sustainable results.

**Keywords:** Green Human Resource Management (GHRM); Agile Leadership; Risk Management; Sustainability; Organizations.

#### RESUMEN

Este estudio explora la relación entre las prácticas de Gestión de Recursos Humanos Verdes (GHRM), el liderazgo ágil y la gestión de riesgos organizacionales. El estudio recopiló datos de 501 gerentes en 130 empresas registradas en la Bolsa de Valores de Ammán en Jordania. Utilizó un cuestionario para recopilar información sobre las prácticas de GHRM de su organización, el estilo de liderazgo ágil y las estrategias de gestión de riesgos. Se utilizaron SPSS y Amos para analizar los datos. Los resultados muestran que las prácticas de GHRM impactan positivamente en la gestión de riesgos, lo que respalda la investigación previa sobre la influencia de GHRM en el fomento de prácticas sostenibles en las organizaciones. Además, el estudio encuentra que el estilo de liderazgo ágil modera la relación entre las prácticas de GHRM y la gestión de riesgos, destacando la importancia del liderazgo para aumentar la eficiencia de las prácticas sostenibles en las organizaciones. Los hallazgos tienen implicaciones para los gerentes y los formuladores de políticas, enfatizando la necesidad de que las organizaciones prioricen las prácticas de GHRM y cultiven el liderazgo

ágil para mejorar sus estrategias de gestión de riesgos, expandir sus habilidades de innovación y alentar prácticas sostenibles. Los formuladores de políticas también pueden usar los resultados para respaldar los esfuerzos de sostenibilidad e instar a las empresas a seguir buenas prácticas de gobernanza y gestión de riesgos. Los hallazgos muestran la importancia del liderazgo ágil como variable mediadora y enfatizan la relevancia de que las organizaciones prioricen las prácticas de GHRM para lograr resultados sostenibles.

**Palabras clave:** Gestión de Recursos Humanos Verdes (GHRM); Liderazgo Ágil; Gestión de Riesgos; Sostenibilidad; Organizaciones.

## INTRODUCTION

Depletion of natural resources, climate change, and pollution are just a few of the environmental sustainability issues that businesses must contend with today.<sup>(1,2)</sup> These problems threaten the future of enterprises, and these problems threaten the health of society and the environment.<sup>(3)</sup> In response, many businesses have embraced eco-friendly methods, which have emerged as an integral part of long-term viability.<sup>(4)</sup> While industrialization has unquestionably boosted productivity and prosperity, it has also adversely affected the natural world.<sup>(5)</sup> Organizations, such as the banking industry, need to take measures to safeguard the environment and ensure the longevity of their operations if this problem is resolved.<sup>(6)</sup> The banking industry's excessive energy usage is a significant cause of environmental damage, prompting the creation of the "Green Banking" movement. Banks may lessen their environmental impact by switching to electronic equipment and eliminating paper transactions.<sup>(7)</sup> This would benefit the environment, the bank's image, and the bank's ability to raise capital.

To reduce the risks associated with the industrial and financial sectors, "going green," or switching from carbon-intensive practices to more environmentally friendly alternatives, has been praised as an essential first step.<sup>(8)</sup> For those serious about preserving the earth, "going green" means actively searching out strategies that promote making decisions less destructive to the environment and more favorable to human health.<sup>(9)</sup> The proposed green idea would reduce the negative environmental impacts of industrialization and development. The modern era prioritizes environmental conservation and sustainable growth.<sup>(10)</sup> Businesses are increasingly "going green" by voluntarily implementing environmentally friendly processes that reduce their environmental impact and make their workplaces and retail outlets safer for everyone involved. This cutting-edge concept is widely used all around the globe. The concept of "green" may be used in many areas, including food, business, marketing, and management. The phrases "green management" and "human resource" (HR) were recently combined to form a new phrase: Green Human Resource Management (GHRM).<sup>(11,12,13)</sup> Human resource strategies developed by GHRM have been proven to enhance companies' resource utilization via extensive testing and analysis.<sup>(14)</sup> Finding GHRM has its roots in efforts to improve environmental sustainability. Human resource management and intellectual property protection are two more elements connected to this idea that is also environmentally beneficial.<sup>(15)</sup>

Promoting sustainable business practices and enhancing environmental performance are two of the primary goals of Green Human Resource Management (GHRM).<sup>(16,17,18,19)</sup> It entails incorporating environmental issues into several HRM activities, including hiring, training, managing performance, and communicating with workers.<sup>(20,21,22,23,24)</sup> Benefits such as better business reputation, financial savings, and compliance with environmental standards might result from implementing GHRM practices.<sup>(25)</sup> Businesses may motivate their staff to help preserve the environment by creating sustainability-related objectives and offering rewards for meeting those goals.<sup>(26)</sup> GHRM techniques. Green human resource management (GHRM) practices are essential in almost all organizations, regardless of size. With more and more people interested in and drawn to eco-friendly ideas, it is clear that businesses need to adopt and effectively use eco-friendly sustainable business practices to impact the environment and achieve long-term sustainability positively.<sup>(27)</sup> The function of GHRM in risk management is not well studied, despite its increasing significance.<sup>(28)</sup> More research is needed on how GHRM might improve business environmental risk management.<sup>(29)</sup> In addition, further research is required to fully understand how agile leadership might play a part in improving the efficacy of GHRM practices within the risk management framework.

Agile leadership is a relatively new method of leading that places a premium on being flexible and open to change.<sup>(1)</sup> Leaders in the agile methodology are experts in navigating complex and unpredictable circumstances, and they take an active role in spotting and mitigating potential threats.<sup>(30)</sup> Organizations may strengthen their approach to controlling environmental hazards by adopting an agile leadership style and embracing Overall, this study fills these knowledge gaps by investigating GHRM's function in risk management, and it does so within the framework of agile leadership.<sup>(31)</sup> Doing so will help us learn how businesses might reduce their environmental impact without sacrificing profitability. This paper aims to explore the role of Green Human Resource Management (GHRM) in managing risk in organizations, focusing on the moderating role of agile

leadership. Besides, to investigate the relationship between GHRM and risk management and examine the impact of agile leadership on this relationship, the paper provides practical recommendations for organizations seeking to enhance their risk management capabilities through GHRM practices and agile leadership strategies.

## Literature review

### *Green Human Resource Management*

Numerous impacts from the enormous need for a more sustainability-oriented and environmentally conscious agenda have been felt by countries both developed and developing (such as Australia, the United States, China, and Brazil), prompting calls for immediate change and the adoption of green practices.<sup>(32)</sup> The global economy is very competitive. Therefore, businesses must be efficient and provide value and responsible, including environmental responsibility.<sup>(33)</sup> Companies are increasingly embracing environmental practices due to rising global environmental concerns; doing so may help them become more “green” and hence more competitive.<sup>(34)</sup> Scholars have suggested that human resource management (HRM) plays a significant role in pursuing this green agenda.<sup>(35,36,37)</sup> As a result, increasing the chance of a company’s sustainability may be accomplished by incorporating green practices into HRM operations. With the awareness that Green HRM is one method for a firm to lessen its environmental “footprint” and become more sustainable, interest in this field has multiplied over the last decade. Scholar interest in Green HRM studies has risen dramatically since 2016.<sup>(38,39,40)</sup> This has led to a meteoric rise in research on Green HRM. Human resources departments worldwide are going paperless, reducing their carbon footprint, and improving their waste management because of a growing awareness of environmental concerns and the benefits of adopting Green HR practices.<sup>(41)</sup> Human resources are critical in launching green projects, engaging employees, and introducing new procedures.<sup>(42)</sup>

Green Human Resource Management (GHRM) is a field that incorporates many theoretical frameworks to explain the attitudes of individuals and the behaviors of organizations toward environmental efforts. The Theory of Reasoned Action (TRA) and its recent extension, the Theory of Planned Behavior (TPB),<sup>(43)</sup> propose that actions, such as engaging in eco-friendly efforts, are determined by individuals’ behavioral intentions, which are in turn impacted by their attitudes, subjective norms, and perceived behavioral controls. Incorporating an additional dimension, the Social Cognitive Theory emphasizes the notable influence of observational learning, positing that the demonstration of environmentally conscious activities by leaders within organizations may catalyze the adoption of comparable behaviors by others. Furthermore, the Stakeholder Theory posits the need to consider various stakeholder environmental concerns. On the other hand, the Institutional Theory proposes that organizations adopt environmentally friendly human resource practices to conform to prevailing industry standards.<sup>(44)</sup>

From a strategic perspective, the Resource-Based View (RBV) framework, as discussed by<sup>(45)</sup> highlights the significance of GHRM practices as essential resources that may confer firms with a distinct competitive advantage. The Norm Activation Model (NAM)<sup>(46)</sup> emphasizes the significance of personal norms in motivating environmentally friendly activities, significantly when people recognize the environmental consequences of their actions and assume personal accountability. These interconnected theories provide a robust framework for organizations navigating the complex domains of Global Human Resource Management (GHRM). One way to think about Green HRM is as a process of steady evolution for a company.<sup>(47)</sup> HRM is seen as promising long-term.<sup>(34)</sup> However, diverse contributions from organizational departments, especially HRM, are needed for environmental initiatives to be successful inside a firm.<sup>(48)</sup> The human resources department plays a crucial part in developing and executing long-term corporate strategy; as stated by<sup>(37)</sup>, Human resources may help formulate and achieve environmental and social objectives while striking a balance with more conventional measures of financial success. Human resources have the potential to collaborate with other departments on matters of company values and sustainability.

### **Risk Management**

The modern corporate world is dangerous, making risk management more important than ever. It entails seeing prospective dangers, weighing the probability and severity of such dangers, and taking steps to lessen or control them. There is a lot of written material on risk management because of its prominence in the field.<sup>(49)</sup> The research overwhelmingly supports the idea that a methodical strategy is the best way to handle risk. To aid businesses, several frameworks and approaches have been created. The ISO 31000:2018 standard is one such framework, as it outlines the concepts and criteria for risk management. The need for frequent reviews and updates to the risk management strategy, as well as the participation of all stakeholders, from upper management to front-line workers, are emphasized by this framework.<sup>(50)</sup> The need to foster an internal culture of risk is another central point. Risk culture is a shared belief in identifying and communicating risks to the appropriate parties. The literature emphasizes the need for top-level buy-in to create a risk culture and for thorough integration of risk management into every facet of the business.<sup>(14)</sup> The third overarching concept is the role of technology in hazard mitigation. Thanks to technological advancements, businesses can now gather

and analyze massive volumes of data, which they can use to better detect and respond to potential threats. Artificial intelligence, machine learning, and data analytics have been cited as promising ways to enhance risk management's effectiveness.<sup>(23)</sup>

Risk management is a systematic practice that draws upon several fields, including finance and engineering, and has traditionally been used to safeguard against uncertainties that may hinder achieving goals. The development of risk management has been significantly affected by core ideas, one of which is the value Theory.<sup>(51)</sup> This theory focuses on the decision-making process of humans in situations of uncertainty and suggests that individuals base their choices on the anticipated value of potential outcomes. The Agency Theory, as explored by <sup>(52)</sup>, is a fundamental theoretical framework that investigates the dynamics between principals, such as shareholders, and agents, such as managers. This theory places particular emphasis on the potential consequences of divergent interests, which may result in risk-taking behaviors that deviate from the objectives of the principal. The Modern Portfolio Theory proposed by <sup>(53)</sup> significantly transformed the concept of risk management in finance. This theory introduced the notion that the risk associated with a portfolio may be effectively reduced via the strategic diversification of assets. In finance, the Capital Asset Pricing Model (CAPM) was subsequently enhanced by <sup>(54)</sup> to establish a more nuanced connection between an asset's anticipated return and its associated level of risk. From an organizational standpoint, frameworks such as the COSO Enterprise Risk Management (ERM) Framework<sup>(55)</sup> have offered systematic methodologies for recognizing, evaluating, ranking, and controlling risks throughout an enterprise, guaranteeing congruence with organizational goals and stakeholder anticipations. Finally, literature stresses the significance of gaining knowledge from previous errors. After a risk event, an organization should analyze what went wrong and implement measures to avoid a recurrence. This may include retraining current employees or introducing brand-new processes, procedures, or controls. In conclusion, the literature on risk management emphasizes the need for a systematic and all-encompassing approach to risk management, the value of a risk culture inside an organization, the potential of technology to enhance risk management results, and the significance of learning from previous failures. Reduce losses and go closer to your organization's goals with the aid of effective risk management.<sup>(56)</sup>

### Agile Leadership

An emphasis on the client is critical to an agile leadership style. Leaders often make decisions in conventional forms of leadership based on their knowledge and experience.<sup>(49,57,58)</sup> However, under agile leadership, the requirements and wants of the client come first. This necessitates executives to empathize with customers, actively seek input, and be ready to make adjustments depending on what they learn. Putting the client first in all you do is a certain way to increase your chances of success.<sup>(59)</sup> To achieve a customer-centric strategy, it is crucial to have open lines of communication, teamwork, and feedback. In order to fully grasp their clients' wants and requirements, agile executives must maintain open lines of communication. In addition, they need to work together with their teams and relevant stakeholders to find appropriate solutions. Leaders that adopt an agile mindset depend heavily on feedback to adjust and enhance their methods.<sup>(60)</sup> A mindset that encourages new ideas is also crucial for effective agile leadership. Leaders in the agile movement see the value of anticipating and adapting to the demands of their customers and the market. Leaders should inspire workers to try new things and take calculated risks in order to create an environment conducive to innovation.

<sup>(61)</sup> They should also encourage staff to contribute their thoughts and suggestions and provide them with the means to see them through.<sup>(47)</sup> To be really nimble, leadership must take on a servant mentality. Leaders who put their followers' needs first give their workers more autonomy and responsibility. When treated with respect and appreciation, workers are more likely to be invested in their work and motivated to do their best. It may also improve output since workers will be more dedicated to their jobs and proud of the output they produce.<sup>(62)</sup>

The underlying idea of agile leadership is intricately linked to the principles outlined in the Agile Manifesto.<sup>(63)</sup> This manifesto places significant emphasis on fostering customer cooperation, adaptability to change, and recognizing the importance of humans and their relationships. Agile leadership applies these ideas to organizational leadership, emphasizing a decentralized approach to decision-making, fostering adaptation, and nurturing a development mentality. The theoretical framework of Complex Adaptive Systems Theory<sup>(64)</sup> offers a basis for understanding agile leadership. It suggests that businesses, similar to natural systems, are intricate and constantly changing entities. Consequently, effective leadership must possess the ability to adapt and react to developing patterns within these complex systems.

Agile leaders adhere to the principles of Servant Leadership,<sup>(65)</sup> prioritizing the well-being and requirements of the team while facilitating the growth and optimum performance of individual team members. Additionally, the organization implements a Growth Mindset<sup>(66)</sup> proposed, which fosters a mindset that promotes adaptation and ongoing learning. From an organizational standpoint, agile leadership fosters a culture characterized by ongoing feedback loops, facilitating the implementation of Reflective Practice<sup>(67)</sup> to consistently assess and adapt team methodologies. These leaders acknowledge that in the current VUCA (volatile, uncertain, complex, and ambiguous) environment, the ability to adapt and respond quickly is beneficial and necessary



for effective leadership. Finally, successful agile leadership is characterized by adaptability to uncertainty and change. Leaders with an agile mindset accept that change is constant and adapt swiftly to shifting market circumstances, client demands, and other external variables. This calls for an attitude of toughness, flexibility, and never-ending growth. To sum up, agile leadership is a management style that puts the customer's needs first while also emphasizing innovation, servant leadership, flexibility, and adaptability. Organizations may remain competitive and accomplish long-term goals by adhering to these guiding principles.<sup>(19)</sup>

### **Hypotheses development**

#### ***Green Human Resource Management and Risk Management***

Increasingly, businesses are seeing the need for Green Human Resource Management (GHRM) to incorporate environmental sustainability into their human resource practice.<sup>(36)</sup> Reducing carbon emissions, preserving resources, and encouraging environmentally friendly behaviors among workers are all examples of environmental sustainability objectives that may be supported by implementing GHRM policies and practices.<sup>(41)</sup> Improvements in environmental performance, employee job satisfaction, and brand reputation are some beneficial results linked to GHRM practices.<sup>(4,36,68)</sup> In today's world, people face a number of challenges, and we all try to find a happy medium between the two options we have. First, economic growth, and then environmental sustainability. According to some, this puzzle may have an answer.<sup>(28)</sup> Ecological HRM (EHRM) borrows ideas from conventional HRM (Human Resource Management). One of its main goals is to highlight HRM's role in reducing the likelihood of contamination occurring when a company does its daily business. It displays a company's dedication to environmental safety and sustainability.<sup>(69)</sup>

Because of this, the institutions above have begun implementing several eco-friendly policies and procedures. Using this method also highlights the potential gains businesses may make regarding operational efficiency and clarity. Human resource management (HRM) practices are environmentally beneficial since they reduce resource consumption by firms.<sup>(10)</sup> Waste is permanently reduced when business skills are honed. Organizations and corporations may further reduce their carbon footprint by using green HRM practices.<sup>(70)</sup> Human resources experts are crucial in fostering an organization-wide commitment to environmental protection. Human resource management may be seen as the required promoter of an individual's goal to preserve one's environment and an awareness of one's environmental impact.<sup>(51)</sup> This leads us to the first hypothesis.

H1: There is a positive relationship between Green Human Resource Management and Risk Management.

#### ***Green Human Resource Management and Agile Leadership***

Agile Leadership and Green Human Resource Management (GHRM) practices are crucial for businesses that want to be sustainable in the long run and adapt to changing market circumstances.<sup>(71)</sup> Because of their mutual commitment to long-term viability and adaptability, the hypothesis predicts that businesses adopting GHRM practices will also be more inclined to use agile leadership techniques. This hypothesis states that Agile Leadership practices are more likely to be implemented if GHRM practices are put into place. Several aspects of Agile Leadership may benefit from the use of GHRM procedures. The Agile Leadership framework relies heavily on a culture encouraging experimentation and novelty; GHRM practices may contribute to this goal. Organizations' capacity to adapt to shifting market circumstances and consumer demands may be aided by fostering workers' imaginative approaches to sustainability concerns.<sup>(72)</sup> In addition, GHRM practices may encourage teamwork and dialogue, both of which are essential features of Agile leadership. Companies may be more successful in achieving their sustainability goals by encouraging employee participation in the design of related activities.<sup>(73)</sup> This leads us to the second hypothesis.

H2: There is a positive relationship between Green Human Resource Management and Agile Leadership.

#### ***Risk Management and Agile Leadership***

Organizations that want to adapt to changing market circumstances and achieve sustained development should adopt effective Risk Management and Agile Leadership practices.<sup>(12)</sup> The hypothesis states that as both effective Risk Management and agile leadership practices prioritize flexibility and risk avoidance, organizations that have adopted the former are more likely to have the latter in place. According to this theory, adopting good Risk Management practices has a constructive impact on adopting Agile Leadership techniques. There are several ways in which Agile Leadership may be influenced for the better by adopting sound Risk Management procedures. Effective Risk Management practices may, for instance, aid businesses in spotting and evaluating threats posed by shifting market circumstances and novel endeavors.<sup>(30)</sup> One of the hallmarks of Agile Leadership is the ability to create plans that can quickly and easily adjust to changing circumstances.<sup>(74)</sup> In addition, an essential aspect of Agile Leadership is fostering an environment where people are comfortable taking risks and learning from their mistakes. Organizations may benefit from their teams' unique views and skillsets, as well as the increased likelihood of success by encouraging workers to recognize and address potential threats to new projects.<sup>(33)</sup> This leads us to the third hypothesis.

H3: There is a positive relationship between Risk Management and Agile Leadership.

### Mediation Role of Agile Leadership

There is a positive correlation between GHRM practices and the efficiency of risk management, and this correlation is mediated by Agile Leadership, as shown by the offered theoretical and empirical data.<sup>(75)</sup> Improved results in Risk Management are directly attributable to Agile Leadership techniques, promoting the adoption and use of GHRM procedures. Organizations may better detect and evaluate risks related to sustainability concerns if they adopt GHRM practices, which encourage environmental responsibility and sustainability among workers. Organizations may better prepare for and respond to risks by fostering a culture of sustainability.<sup>(22)</sup> By easing the way for their adoption and improvement, Agile Leadership practices may operate as a go-between for GHRM and Risk Management. Organizations may respond more effectively to shifting environmental circumstances and emerging sustainability concerns, for instance, when they foster a culture of flexibility and creativity via the use of Agile Leadership practices.<sup>(76)</sup> In addition, Agile Leadership practices may promote a culture of continual learning and development, which can assist businesses in honing their GHRM procedures and increasing the efficiency with which they manage risks.<sup>(71)</sup> This leads us to the fourth hypothesis.

H4: Green Human Resource Management is positively associated with Risk Management through perceived agile leadership.

### METHOD

#### Data Collection Methods, Sampling Strategy, and Study Design

Convenience sampling was used to recruit participants for this research. Managers from 130 195 businesses registered on the Amman Stock Exchange were included in the sample.<sup>(77)</sup> suggested that this sample size is suitable in light of the population that was considered. Due to the quantitative nature of the research, a questionnaire was utilized to collect information from the study's participants. To guarantee a high response rate, the researcher worked with the organizations' human resources departments and delivered the questionnaire directly to the participants. Incomplete replies were the reason for the dismissal of 8 of the 78 questionnaires. As a consequence, 70 total questionnaires were included in the analysis. Table 1 presents the demographic information of the research participants. The study's techniques for choosing the sample, collecting the data, and guaranteeing a high response rate were all adequate. The sample size was judged to be appropriate for the aims of the research, and data collection was streamlined by the use of a questionnaire.

Table 1. Respondent's demographic characteristics data analysis

| Age                |        |       | Educational Level       |        |       | Gender   |        |       |
|--------------------|--------|-------|-------------------------|--------|-------|----------|--------|-------|
| Category           | Freq # | %     | Category                | Freq # | %     | Category | Freq # | %     |
| 20-29              | 181    | 36,1  | Ph.D. / DBA             | 55     | 11,0  | Male     | 287    | 58,4  |
| 30-39              | 212    | 42,3  | Masters                 | 151    | 30,1  | Female   | 214    | 41,6  |
| 40-49              | 62     | 12,4  | Bachelor                | 285    | 56,9  | Total    | 501    | 100,0 |
| Age >= 50          | 46     | 9,2   | Diploma                 | 10     | 2,0   |          |        |       |
| Total              | 501    | 100,0 | Total                   | 501    | 100,0 |          |        |       |
| Experience         |        |       | Managerial Position     |        |       |          |        |       |
| Category           | Freq # | %     | Category                | Freq # | %     |          |        |       |
| Less than 5 years  | 209    | 41,7  | Executive Manager       | 58     | 11,6  |          |        |       |
| 5-10 years         | 105    | 21,0  | Branch Manager          | 85     | 17,0  |          |        |       |
| 10-15 years        | 26     | 5,2   | Head of Division        | 115    | 23,0  |          |        |       |
| 15-20 years        | 42     | 8,4   | Administrative Employee | 159    | 31,7  |          |        |       |
| More than 20 years | 209    | 41,7  | Other                   | 84     | 16,8  |          |        |       |
| Total              | 501    | 100,0 | Total                   | 501    | 100,0 |          |        |       |

The following table 1 shows demographic data for survey participants. There are sections for age, education, experience, and gender. The age of the interviewees is a significant factor in comprehending their background. The age range of 30 to 39 years was the most prominent group, including 212 individuals, accounting for 42,3 % of the whole sample. Following closely, the demographic of individuals aged 20 to 29 accounted for 36,1 % of the whole sample, with 181 participants. On the other hand, it is worth noting that the age group of individuals between 40 and 49 years constituted a comparatively lower proportion of 62 respondents, corresponding to

12,4 % of the total sample. The oldest age group, including those aged 50 and above, constituted a minority, accounting for 9,2 % of the total sample size, comprising 46 respondents. Upon gender-based analysis, the results revealed a prevalence of males. Out of the total sample size of 287 participants, 57,3 % ( $n = 287$ ) self-identified as male, while 42,7 % ( $n = 214$ ) identified as female.

When examining the educational credentials of the participants, it was found that a substantial proportion of 56,9 % ( $n=285$ ) had a Bachelor's degree. The proportion of individuals holding a Master's degree was 30,1 %, as reported by 151 respondents. The population segment consisting of individuals with advanced degrees, such as a Ph.D. or master, sometimes referred to as the academic elite, constituted a somewhat specialized group, comprising around 11 % of the total population. This category was identified via the responses of 55 participants. At the foundational level, the number of persons with a Diploma was limited, including just 2 % or 10 participants. Based on the available data, it can be inferred that the respondents possess professional experience mainly characterized by a relatively young to mid-career stage. Most participants, namely 41,7 % or 209 persons, had a range of experience from 5 to 10 years. The subsequent significant group, including individuals with a duration of less than five years, accounted for 23,8 % or 119 participants. A cohort of individuals with a higher level of expertise, ranging from 10 to 15 years of experience in the respective profession, constituted 21 % of the total responses, amounting to 105 participants. The proportion of veterans with 15 to 20 years of experience was 5,2 %, as indicated by 26 respondents. Similarly, veterans with more than 20 years of experience accounted for 8,4 % of the sample, with 42 respondents.

### Study Instrument and Analysis

Two academic professionals in translation from English to Arabic revised a structured questionnaire initially developed in English. From January through March of 2023, the questionnaire, available in English and Arabic, was sent out to respondents using an online survey system. SPSS 25 (Statistical Package for the Social Sciences) and AMOS 24 were used for data analysis in this research. (Analysis of Moment Structures). Descriptive statistics were run in SPSS 25, including averages, standard deviations, and frequency distributions. Additionally, SPSS 25 was used for inferential statistics, including t-tests and ANOVA. Confirmatory factor analysis (CFA) in AMOS 24 was used to evaluate the hypothesized model. AMOS 24 was also used for structural equation modeling (SEM) to examine the interrelationships between the variables. Both descriptive and inferential statistics and a test of the suggested theoretical model were performed using SPSS and AMOS, respectively.

### Measurement

All of the indicators of quality used in this study were modified from those used in other studies. One scale was used to evaluate several Green Human Resource Management framework aspects. The ten-item scale created by <sup>(38)</sup> was used to assess this. The statement "My company sets green goals for employees" represents the scale's content. This scale has a Cronbach's alpha of 0,91. The Risk Management scale from (Brown et al., 2009) with its ten items was used. The statement "Our organization has a well-established risk management system that identifies and addresses potential risks in a timely and effective manner" represents the statement included on this scale. This scale's Cronbach alpha was calculated to be 0,94. The seven-item scale was created by (Akkaya et al. (2022) to evaluate agile leadership styles adapted to this. The Cronbach alpha for this scale was calculated to be 0,95; an example item from this scale is "Our organization's leadership encourages and supports employees to be innovative and experiment with new ideas and approaches." A five-point Likert scale ranging from "strongly disagree" to "strongly agree" was used to evaluate each scale's items.

## RESULTS

### Validation of Measures

Studies rely heavily on using valid and reliable measurements, which consistently assess the target construct and provide an accurate representation of that construct. The outcomes of the measures' validation procedure are shown in Table 2 for this research. The independent variables in the table's three columns are Green HRM, Risk Management, and Agile Leadership. The cell numbers show the item-total correlations, and each row stands for a separate scale item. Each item's score is correlated with the scale's overall score to get the item-total correlation. The resultant correlation coefficient reveals how well the item and the scale measure the same concept. Each item in table 2 has a positive and statistically significant correlation with the total, suggesting that it is a good indicator of the underlying construct being assessed by the scale. In addition, the item-total correlations range from moderately connected (0,563 to 0,809) to strongly correlated (0,570 to 0,774) for Risk Management, Agile Leadership, and Green HRM, respectively. Results in table 2 support the hypothesis that the measures used in this research accurately represent the concepts they set out to assess. This implies that the research can be sure that the metrics it uses to evaluate the study variables provide reliable data to derive valuable conclusions.

**Table 2.** Validation of measures for study variables

| Green Human Resource Management |                        | Risk Management |                        | Agile Leadership |                        |
|---------------------------------|------------------------|-----------------|------------------------|------------------|------------------------|
| Item                            | Item total correlation | Item            | Item total correlation | Item             | Item total correlation |
| 1                               | 0,718**                | 1               | 0,563**                | 1                | 0,656**                |
| 2                               | 0,741**                | 2               | 0,701**                | 2                | 0,656**                |
| 3                               | 0,755**                | 3               | 0,737**                | 3                | 0,570**                |
| 4                               | 0,659**                | 4               | 0,809**                | 4                | 0,670**                |
| 5                               | 0,712**                | 5               | 0,784**                | 5                | 0,684**                |
| 6                               | 0,584**                | 6               | 0,769**                | 6                | 0,774**                |
| 7                               | 0,810**                | 7               | 0,818**                | 7                | 0,631**                |
| 8                               | 0,756**                | 8               | 0,742**                |                  |                        |
| 9                               | 0,719**                | 9               | 0,808**                |                  |                        |
| 10                              | 0,768**                | 10              | 0,636**                |                  |                        |

### Overall Evaluation of the Model

Indicators of model assessment for the proposed theoretical model are presented in table 3. The four metrics shown in the table are the Chi-Square (2), the Normed Fit Index (NFI), the Incremental Fit Index (IFI), and the Comparative Fit Index (CFI). The goodness-of-fit may be quantified from 0 to 1 using the CFI, IFI, and NFI. When the value is 1, the model fits the data well; it does not match it well when it is less than 1. In this scenario, the model fits the data precisely, as shown by all three fit indices, each of which has a value of 1,000.

The Chi-Square (2) test may determine if your model is statistically superior to a null model. (i.e., a model with no relationships between variables). As evidenced by the two values of 0,000 in this example, the model fits the data entirely and significantly better than the null model. Table 3 demonstrates that, on the whole, the proposed theoretical model provides an acceptable description of the relationships between the study variables and is a good fit for the data. This illustrates the model's dependability and permits conclusions about the theoretical foundations and correlations between the variables to be derived.

**Table 3.** Indicators of model evaluation

| CFI   | IFI   | NFI   | χ <sup>2</sup> |
|-------|-------|-------|----------------|
| 1,000 | 1,000 | 1,000 | 0,000          |

### Variables Correlations and Descriptive Statistics

Descriptive data and relationships between the study's three variables (Green HRM, Risk Management, and Agile Leadership) are summarized in table 4. The names of the variables are provided in the first column of the three-column table. Each variable's mean value appears in the second column, while the variable's standard deviation (SD) appears in the third. The Pearson correlation coefficients between the variables are listed in columns 4 through 6, with the highest value appearing in column 4. According to the data, the average score for Green HRM is 19,6, and the standard deviation is 3,339. With a mean of 27,52 and a standard deviation of only 3,020, Risk Management is more centrally concentrated. The most significant standard deviation is 3,655, and the highest mean is 43,40 on the Agile Leadership scale. The results show a favorable and statistically significant association between Green HRM and RM ( $r = 0,437$ ,  $p = 0,01$ ). Risk management and agile leadership are positively and significantly related ( $r = 0,551$ ,  $p = 0,01$ ), as are green human resource management and agile leadership ( $r = 0,459$ ). There seem to be strong positive correlations between all of the factors. Risk Management and Agile Leadership correlate well with Green HRM, while Risk Management is correlated favorably with Agile Leadership. From these results, the variables are assessing the characteristics they are meant to test, lending credence to the study's theoretical underpinnings.

**Table 4.** Correlations and descriptive statistics

| Variable                           | Mean  | SD    | 1       | 2       | 3 |
|------------------------------------|-------|-------|---------|---------|---|
| 1- Green Human Resource Management | 19,6  | 3,339 | 1       |         |   |
| 2- Risk Management                 | 27,52 | 3,020 | 0,437** | 1       |   |
| 3- Agile Leadership                | 43,40 | 3,655 | 0,459** | 0,551** | 1 |



### Hypothesis Testing

The results of the hierarchical multiple regressions for the variables are shown in table 5. Green HRM is a predictor in the model, with Agile Leadership and Risk Management serving as mediators. The table also includes the study's hypotheses. Results reveal that Green HRM is significantly related to risk management ( $r=0,874$ ,  $t=7,674$ ,  $p=0,01$ ) and agile leadership ( $r=0,502$ ,  $t=5,817$ ,  $p=0,01$ ), crediting hypotheses H1 and H2. In addition, the data confirms a positive and statistically significant correlation between Risk Management and Agile Leadership ( $r=0,518$ ,  $t=4,790$ ,  $p=0,01$ ). Furthermore, the findings corroborate hypothesis H4, showing that Green HRM is linked to effective risk management through agile leadership perceptions. The substantial indirect impact of Green HRM on Risk Management through Agile Leadership ( $r=0,449$ ,  $t=3,892$ ,  $p=0,01$ ) demonstrates the mediating role of Agile Leadership in the link between Green HRM and Risk Management. All of the study's assumptions are supported, and the modified R2 values and F change statistics point to a satisfactory fit between the model and the data.

|                                 | Risk Management |          |       | Agile Leadership |          |       |
|---------------------------------|-----------------|----------|-------|------------------|----------|-------|
|                                 | B               | t        | SE    | B                | t        | SE    |
| Predictor                       |                 |          |       |                  |          |       |
| Green Human Resource Management | 0,874**         | 7,674    | 0,114 | 0,502**          | 5,817    | 0,086 |
| Adjusted R                      |                 | 0,311    |       |                  | 0,114    |       |
| F change                        |                 | 58,894** |       |                  | 33,836** |       |
| Mediator                        |                 |          |       |                  |          |       |
| Agile Leadership                | 0,518**         | 4,790    | 0,108 |                  |          |       |
| Adjusted R                      |                 | 0,413    |       |                  |          |       |
| F change                        |                 | 46,008** |       |                  |          |       |

Table 6 displays the results of a bootstrap study performed to determine whether or not Green HRM and RM indirectly influence a mediator variable; however, this variable is not identified. When the influence of two independent variables (here, GHRM and RM) on a third (the mediator variable) is mediated by one or more intermediary variables, we speak of an indirect effect (Agile Leadership). The study found that GHRM had a statistically significant indirect influence on the mediator variable, with a compelling value of 0,3626 and a 95 % CI of  $-0,695$  to  $0,6848$ . A moderate indirect impact of GHRM on the mediator variable is suggested by the effect size of 0,3626. In other words, GHRM does not directly impact the mediator variable but affects it indirectly through one or more intermediary variables.

An additional significant finding included in the table is the 95 % confidence interval (95 % CI), which indicates the probable range of values within which the real impact of GHRM on the mediator variable will fall (95 % CI). The real impact of GHRM on the mediator variable is most likely to lie within the 95 % CI range  $-0,695$  to  $0,6848$ , which it does here. The absence of zero in this region indicates a statistically significant indirect impact of GHRM on the mediator variable. Taken as a whole, the bootstrap findings imply that GHRM has a statistically significant indirect influence on the mediator variable through one or more intermediary factors.

In other words, the findings corroborate hypotheses H1 and H2 in that there is a positive and statistically significant association between Green HRM and both Risk Management ( $r=0,874$ ,  $t=7,674$ ,  $p=0,01$ ) and Agile Leadership ( $r=0,502$ ,  $t=5,817$ ,  $p=0,01$ ). Positive and significant findings ( $r=0,518$ ,  $t=4,790$ ,  $p=0,01$ ) were also found between Risk Management and Agile Leadership, crediting hypothesis H3. Green HCM is shown to have a reasonable correlation with Risk Management as measured by perceived Agile Leadership, lending credence to hypothesis H4. Green HRM substantially indirectly influences Risk Management through Agile Leadership ( $r=0,449$ ,  $t=3,892$ ,  $p=0,01$ ), suggesting that the latter serves as a mediator in the link between the former two. The data corroborates all of the study's hypotheses, as shown by the high values of the adjusted R-squared and the F-change statistics.

| Bootstrap results for indirect effects of Green Human Resource Management Risk Management through a mediator |        |            |            |
|--|--------|------------|------------|
|  | Effect | LL 95 % CI | UL 95 % CI |
| Green Human Resource Management  | 0,3626 | 0,0695     | 0,6848     |

## DISCUSSION

The complex interplay between Green Human Resource Management (GHRM) and its subsequent effects on organizational risk management is an area that has yet to be thoroughly investigated. Previous research conducted by <sup>(19,38,44,58,67,74)</sup> has explored the various impacts of GHRM. However, there is a vacuum in existing literature. This gap refers to the intricate examination of the interaction between Global Human Resource Management (GHRM) and risk management, particularly in the context of evolving global paradigms, environmental difficulties, and organizational requirements. The current study aims to address the existing gap in literature by providing an empirical investigation that not only covers this void but also contributes to the academic debate by introducing a fresh conceptual framework. The main focus of our research is to examine the role of agile leadership as a significant mediator in the connection between green HRM practices and the effectiveness of risk management in firms. In order to enhance the empirical foundation of our study, we obtained our data from Jordan. This nation occupies a distinctive geographical location characterized by a convergence of environmental complexities. As Jordan confronts the significant consequences of climate change, the data obtained provide a compelling context for comprehending the practical implications of our research. The foundation of our study is based on the belief that organizations play a crucial role in guiding and transforming human behaviors toward sustainability.<sup>(78)</sup> As reiterated by Blok et al. (2015), the viewpoint expressed underscores the unquestionable impact that organizations possess, particularly when considering the substantial amount of time people spend inside these institutions. In order to enhance the reliability and strength of our study, we used SPSS and Amos, which are well-recognized for their analytical capabilities in management and human resource management.<sup>(79)</sup>

The results of our investigation fulfill many objectives. To begin with, the authors build upon the existing scholarly work<sup>(17,34)</sup> that emphasizes the significant impact of GHRM in promoting and embedding sustainable behaviors inside organizational ecosystems. Furthermore, our findings highlight the crucial significance of leadership in guiding the pursuit of sustainability, which aligns with the viewpoints expressed by <sup>(60,69)</sup> The distinguishing factor of our study is its emphasis on agile leadership as a significant moderating influence. This statement highlights the alignment between the findings of <sup>(16,31,54)</sup>, which emphasize the significant impact of leadership in enhancing the effectiveness of sustainable practices inside organizations. In addition to contributing to the expanding body of literature, our research serves as a valuable resource for organizations and policymakers. This statement highlights the capacity of integrated GHRM approaches to create organizational environments that possess both resilience and sustainability. Significantly, the research highlights the far-reaching consequences of embracing agile leadership models. Effective leadership has a crucial role in enhancing the effectiveness of human resource management (HRM)-oriented risk management techniques while also catalyzing achieving organizational sustainability objectives. In order to maintain a leading position in sustainable practices and effectively manage risks, businesses must consider the prioritization of Green Human Resource Management (GHRM) and agile leadership as an essential rather than a mere choice. The study emphasizes the many advantages, including improved risk management, integration of innovation, and the establishment of sustainability as an integral component. As governments and industry executives confront the dual problems of environmental stewardship and organizational durability, the findings derived from our study provide a strategic framework that has the potential to achieve both sustainability and expansion.

## CONCLUSIONS

This research sheds light on the function of Green Human Resource Management (GHRM) in managing organizational hazards. Our results suggest that GHRM practices may considerably impact risk management behaviors among workers, although indirectly through the mediator variable of agile leadership. These findings imply that organizations prioritizing GHRM practices are more likely to nurture agile leadership, promoting a more effective risk management culture inside the organization. Furthermore, our research emphasizes the significance of agile leadership as a moderator in the association between GHRM and risk-taking workplace behaviors. According to the findings, agile leadership may enhance the benefits of GHRM practices on risk management, highlighting the importance of leadership in developing sustainable organizational practices.

The study's findings are essential for organizational managers and policymakers since they show that applying GHRM practices and nurturing agile leadership may successfully control risks and increase organizational performance. The research also contributes to the current body of information on the link between GHRM and organizational sustainability by providing empirical evidence for the efficacy of GHRM practices in risk mitigation and organizational effectiveness. Overall, the research emphasizes the necessity of a long-term approach to human resource management and leadership practices and useful insights into the processes through which GHRM might affect risk management behaviors in the workplace.

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#### CONFLICT OF INTEREST

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