



To identify key determinants of Green HRM: evidence from the United Nations

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ABSTRACT

Purpose: This study aims to discover key driving factors towards the implementation of Green Human Resource Management (GHRM) in the United Nations (UN) in South Korea.

Design/methodology/approach: As a mixed method, we collected quantitative and qualitative data sets from Human Resource (HR) practitioners or experts in the UN in South Korea. While the survey data was analysed by employing the Consistent Fuzzy Preference Relations (CFPR) method, the qualitative data was analysed through thematic analysis.

Findings: Among HR practice, organisation, HR initiative and leadership dimensions, green recruitment from HR practice is deemed the most vital determinant of GHRM. This study concluded that HR practice including recruitment, and training and development is the most vital one towards GHRM.

Research limitations/implications: Albeit this research lacks a sample size due to limited accessibility for collecting data sets, HR specialists in the UN can refer to our findings to establish a strategic plan as an initial step.

Originality/value: By employing thematic analysis and the CFPR regarded as one of the Multi-Criteria Decision-Making (MCDM) methods, HR practice including green recruitment is the most crucial one towards the implementation of GHRM in the UN in South Korea.

Keywords: Green Human Resource Management, the United Nations, Human Resource Experts, Consistent Fuzzy Preference Relations

I. Introduction

Owing to the importance of environmental sustainability under the global strategy, international managers have pursued Sustainable Human Resource Management (HRM) (Stankevičiūtė & Savanevičienė, 2021). Sustainable HRM in the early stage mainly

underlined socially responsible Human Resources (HR) practices such as working conditions and fair opportunities for training and development (Lopez-Cabrales & Valle-Cabrera, 2020). As one of the sustainable HRM approaches, Green Human Resource Management (GHRM) has attracted more attention today from HR practitioners in both the public and private sectors to enlarge green workforces and cultures (Veerassamy, Joseph & Parayitam, 2023). Moreover, the implementation of GHRM can establish positive public relations and enhance job satisfaction (Moin et al., 2021). The same is true of the

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intergovernmental organisation, namely the United Nations (UN) owing to the starting point of Sustainable Development Goals (SDGs) that can underpin GHRM (Aust et al., 2024). For instance, it is said that Green HRM is relevant to SDG 8 (i.e., decent work) (Liu et al., 2022). However, little is known about HRM in the UN owing to data access difficulties.

The current extant literature has discovered the determinants of GHRM such as HR practices, initiatives, leadership styles and organisational dimension in both the public and private sectors (Amrutha and Geetha, 2020; Tang et al., 2017). For instance, HR practices including green recruitment, performance management, rewards, training and development were mainly addressed for the implementation of GHRM (Ahmad, 2015). Furthermore, in addition to eco-friendly training, the development of green skills was highlighted (Kim et al., 2023). On the other hand, a leadership style may play a vital role in facilitating GHRM, which in turn lowers job dissatisfaction (Moin et al., 2021). Overall, what is still unknown is the most crucial factor towards GHRM in the UN. To tackle this gap, we have collected data sets from the UN in South Korea.

Compared to previous studies or existing literature, this study newly focuses on the driving factors of GHRM relevant to strategic options within organisations. At its core, GHRM 'involves integrating environmentally sustainable practices into human resource policies and practices' (Gupta & Jangra, 2024, 3). Thus, GHRM can be seen as a strategic option available to organisations to generate a shift and contribute to environmental issues by attaining employees committed to 'green' practices and encouraging them to adopt a committed approach to furthering broader organisational and environmental sustainability (Joshi et al., 2022; Gupta & Jangra, 2024).

Regarding the UN context, based on the Brundtland report in the late 1980s, organisational sustainability became popular; sustainability has become a part of international management (Duvnjak & Kohont, 2021). 'The SDGs are based on the five Ps, i.e., people, planet, prosperity, peace and last but not the least partnership and are the contributing factors for

creating a greener environment' (Liu et al., 2022, 2). Therefore, a clear understanding of SDGs can establish effective HR strategies for the implementation of GHRM.

To ascertain core driving factors influencing GHRM in the UN, the question arises: among HR practices, initiatives, organisation and leadership dimensions, what is the crucial element or dimension affecting GHRM? Here, for the quantitative aspect, the Consistent Fuzzy Preference Relations (CFPR) method, regarded as one of the Multi-Criteria Decision-Making (MCDM) methods, is employed. To deepen insights, qualitative data sets are also collected and analysed through thematic analysis (Braun & Clarke, 2006). Thus, data sets from HR experts in the UN in South Korea were collected for this study. As many HR practitioners find it difficult to make employees engaged in GHRM, grasping the most vital factor towards GHRM can help to overcome challenges facing HR experts today (Haddock-Millar, Sanyal & Müller-Camen, 2016).

Compared to other MCDM methods, CFPR is regarded as more cost-effective and robust, due to the $n - 1$ comparison required to be answered and using additive transitivity. Only limited studies used the MCDM method such as the Analytic Hierarchy Process (AHP) for GHRM (Rajabpour, Fathi & Torabi, 2022). Hence, our findings are expected to contribute to theoretical and practical aspects.

II. Literature Review - Determinants of GHRM

A. HR Practice Dimension

1. Green Recruitment

According to Khatoon et al. (2022, 808), green recruitment 'comprises the process of employing people in an organisation who are responsive to the organisation's efforts toward environmental sustainability'. Therefore, organisations need to portray the right

image, which captures their green practices, to attract suitable candidates (Rajabpour, Fathi & Torabi, 2022). Indeed, Cheema & Javed (2017) proposed that before an interview or acceptance, candidates are likely to research an organisation's green credentials to assess whether these align with their own. Likewise, the employer will research prospective candidates to ensure their interests and beliefs align with the organisation's green values and beliefs (Guerci, Longoni & Luzzini, 2016). A report by the International Labour Organization (ILO) (2018), found that by 2030, approximately 18 million new jobs will be created globally from the transition towards greener energy efficiency and the increased use of renewable energy. These new opportunities, however, will also rely on the promotion of the green economy and continued investment in decent work. Whilst employers and the workforce have already made substantial contributions with the introduction of green jobs; globally there needs to be a continued commitment towards environmental sustainability (Guerci, Longoni & Luzzini, 2016). Practices driven towards green recruitment, therefore, are arguably one of the more prominent talent acquisition tools any organisation, seeking to achieve its sustainability goals, needs to be able to deploy (Khattoon et al., 2022). Prospective employees searching for career development, better prospects and greater job security are more inclined to select an organisation which upholds and promotes green values and organisational culture; in the belief that such organisations would provide what they are looking for in an employer (Amrutha & Geetha, 2020). Therefore, employers also need to ensure the entire recruitment process is sustainable.

2. Green training and Development

Whilst green recruitment may be one of the first stages in an organisation's talent management strategy; this alone is not sufficient and needs to be diligently followed up by strategies to retain top-performing talent well-versed in the organisation's green practices (Khattoon et al., 2022). It requires

environmental training and development such as personalised training, workshops and seminars which raise environmental awareness amongst employees to facilitate GHRM. Green training and development are often used for a plethora of reasons including promoting GHRM as a core value, upskilling employees in green policies, equipping employees to effectively perform green tasks, encouraging knowledge sharing to advance performance and enhance environmental awareness within the organisation (Kim et al., 2023). Practically, in addition to facilitating economic growth, the UN accentuate the human development index to enlarge personal capabilities, development and environmental awareness (Morse, 2003). Some scholars have also suggested that green training and development can lead to increases in commitment and employee engagement and nurture ethical culture. In turn, this can enhance Corporate Social Responsibility (CSR) and sustainability (Guerci et al., 2015).

3. Green Performance Management

According to Tang et al. (2017, 33), green performance management concerns 'a system of evaluating activities of employees' performance in the process of environmental management'. It aims to enhance the general performance of individuals, evaluating staff's environmental performance particularly linked to their contribution to organisational green tasks. For actualising green performance management for sustainability, it is implied that green performance indicators should be established first, aligned with eco-initiatives (Guerci et al., 2016). Performance indicators can be linked to the environmental responsibilities of individuals and environmental issues such as the reduction of carbon emissions. Furthermore, communication abilities for environmental concerns and policies could be underscored for the appraisal index (Tang et al., 2017). Green performance management has been deemed the most effective practice for helping staff align their action plans with environmental objectives (Rajabpour, Fathi & Torabi, 2022).

Indeed, with the UN attempting to confront worldwide sustainability issues through a clearer understanding and adoption of the SDG it is becoming ever more crucial for organisations to recognise how they can encourage their workers to espouse the principles of sustainability (e.g., GHRM) (Joshi et al., 2023). Yet with the UN's Sustainable Development Goals Report 2024 (United Nations, 2024) reporting progress is faltering, there needs to be a greater shift towards sustainable economic policies, inclusive performance management and formal feedback, and stronger employment rights.

4. *Green Pay and Reward*

Pay and reward act as key incentives in employee behaviour, enabling and motivating employees towards goals and career advancement and, as such, are integral to promoting and improving green behaviour, practices, and performance in the workplace (Kim et al., 2023). To be fully effective, green pay and reward systems in line with the outcome of the performance evaluation must also align with the organisation's environmental criteria, strategy and culture (Marrucci, Daddi & Iraldo, 2024). As such, it may lead to several increased benefits within the organisation. Indeed, Kuo et al. (2022), discovered that green compensation and rewards significantly influenced environmental performance. Jamal et al. (2021), found green pay and rewards positively influence sustainability practices. According to the ILO's Skills for Green Jobs Synthesis Report, however, suitably skilled workers may find green roles unattractive due to the association with poorer working conditions, including lower levels of pay, in some areas of the green industry (Strietska-Illina et al., 2011). Thus, there is a need for continued improvement in working conditions across green industries to unlock greater productivity and higher levels of pay for workers in these roles (Kim & Lee, 2023). A focus should also be placed on the investment into green skills development with recognition of the role; more advanced green skills play in generating higher pay (ILO, 2018; Strietska-Illina et al., 2011).

B. Organisational Dimension

1. *Green Culture*

According to Harris & Crane (2002, 218-219), green organisational culture may be referred to as 'the extent to which the assumptions, values, symbols and artefacts of the organization reflected a desire or need to operate in an environmentally sustainable manner'. Fostering a culture of sustainability may enable an organisation to mould cultural values and practices and instil green culture principles into the HR practices (Khatoon et al., 2022). Pham et al. (2018) discovered that green organisational culture can have a significant positive effect on organisational citizenship behaviour for the environment; in addition to moderating the effect of green training on OCBE. Additionally, it has been demonstrated that green organisational culture can alter existing thoughts and patterns of working; and lead to a positive influence on green performance, innovation, and competitive advantage. It is discovered that organisational culture significantly influences environmental performance. Therefore, it is little surprise that the influence of green organisational culture on performance has become an area of heightened concern (De Marchi, 2012). Indeed, in Ireland plans for Green Public Procurement have previously discussed creating sustainable workplaces with the development of cultures of energy conservation highlighted as a point of action (ILO, 2022). When considering the UN deemed the root of SDGs, a supportive culture can facilitate HR initiatives. Individuals with strong personal environmental norms may believe that a supportive culture can trigger GHRM significantly (Al-Alawneh, Othman & Zaid, 2023).

2. *Green Welfare Approach*

Khatoon et al. (2022) stated that the green welfare approach of firms can be deemed as a key driving factor for the implementation of GHRM. A shift can be seen from the concept of social welfare protection to a green welfare approach to elicit sustainability

(Stankevičiūtė & Savanevičienė, 2021). Theoretically, the green welfare approach is defined as a way to assist environmental management such as aiding green initiatives, sustainable development for management and eco-friendly strategies at the firm level (Khatoon et al., 2022). In contrast, the social welfare approach captures green products and producer surplus budgets. For pursuing green initiatives, as an approach to CSR, many firms have focused on comprehensive plans for sustainable development and green responsibilities such as energy and climate change, which in turn, influences affirmative impacts on societies and natural business environments. Interestingly, it is implied that a firm's behaviour toward sustainable development toward the environment (e.g., investment in eco-friendly facilities) can influence individuals' green behaviour.

C. HR initiative Dimension

1. Participation

For the implementation of GHRM, individual participation or involvement in activities supporting a green environment is crucial (Tang et al., 2017). This is because employees may regard their participation as an opportunity to enhance their awareness of pro-environmental actions (Veerassamy, Joseph & Parayitam, 2023). It is claimed that organisations should reflect sustainability in the workplace to help individuals solve environmental concerns and facilitate employee participation towards pro-environmental behaviours such as energy savings. Ahmad (2015, 10) stated that 'the HR department at the UK arm of Sky has started a campaign where the employees are asked to turn off PCs, TVs, and lights when leaving, to use 100% renewable energy, and introduced solar lighting. Furthermore, individuals can be asked to curtail the use of raw materials for recycling in the workplace. HR practitioners can establish a firm's recycling programs to help employees participate in green HR initiatives (Ahmad, 2015). As reported in the ILO's

Skills for Green Jobs Synthesis Report (Strietska-Illina et al., 2011), to unlock the potential from greener jobs, there needs to be a shift in skills development and encouragement of participation with new talent pools unlocked to source candidates with active involvement plans and skills to perform in the green economy. This shift will also require successful training and participation to be made accessible and inclusive for all; especially, for example, individuals with disabilities, disadvantaged groups, and those in rural communities to ease the transition into green working (Strietska-Illina et al., 2011).

2. Paperless office

Many international firms have pursued the implementation of green initiatives for their long-term organisational vision to achieve competitive advantages (Ahmad, 2015). Creating strategic green initiatives may be imperative in encouraging perceptions of organisational support which, in turn, can lead to greater engagement with and willingness to become involved with green activities and behaviour (Pham et al, 2018). In addition to the establishment of green buildings for energy efficiency and renewable energy, paperless offices should be proposed by HR practitioners as a part of HR initiatives. Concerning paperless offices, which can reduce carbon dioxide emissions, the environment of paperless offices was understood as a driver for virtual HR (West and Berman, 2001). Similarly, the UN's Asia-Pacific Trade and Investment Report in 2021 stressed the significance of going paperless due to the environmental impacts (UN, 2021). Paperless offices can also facilitate organisational commitment, elaborate data security systems and cost reduction.

D. Leadership Dimension

1. Green Ethical Leadership

According to Ahmad & Umrani (2019, 543), 'people expect that ethical leaders will also promote

environmentally friendly policies and practices within their organisation'. Indeed, Ahmad et al. (2021, 533) argued that 'ethical leadership bears a positive influence on employee behavior and the environment through its commitment to achieving collective good by engaging in eco-ethical and sustainable practices'. As such, followers are likely to pay greater attention to an ethical leader and attempt to emulate such behaviour in their actions and outlook (Islam et al., 2021). An ethical leader may encourage green behaviour in followers by exemplifying and expressing ethical environmental beliefs through their behaviour; thereby promoting actions of responsibility and environmental awareness. In a similar vein, ethical leadership founded on concern and awareness for the environment can help HR in achieving environmental strategies and targets. Indeed, Ahmad et al. (2021) found that ethical leadership positively

influences green behaviour and GHRM with followers' perception of ethical leadership behaviour positively influencing environmental knowledge.

2. Green Transformational Leadership

According to Chen, Chang & Lin (2014, 6606), green transformational leadership is concerned with the 'behaviors of leaders who motivate followers to achieve environmental goals and inspire followers to perform beyond expected levels of environmental performance'. Singh et al. (2020) suggested that such leaders may be more inspired to implement and encourage the adoption of GHRM practices to inspire or motivate followers and to encourage empowerment. Thereby adopting GHRM principles to encourage greater green ability and to promote a green corporate image based on environmental beliefs. Indeed, their

Table 1. The determinants of GHRM (Stage 1)

Determinants	Meaning	Relevant sources	Dimension
Green recruitment (G1)	The process of employing individuals responsive to the firm's efforts toward environmental sustainability	Khatoun et al. (2022); Rajabpour, Fathi & Torabi (2022)	HR practice
Green training and development (G2)	Green talent management strategy such as personalised training, workshops and seminars which raise environmental awareness	Kim et al. (2023); Rajabpour, Fathi & Torabi (2022)	
Green performance management (G3)	A system of assessing activities or individual performance under the procedure of environmental management	Rajabpour, Fathi & Torabi (2022); Tang et al. (2017)	
Green pay and reward (G4)	Green pay and reward systems aligned with the organisation's environmental criteria, strategy and culture	Jamal et al. (2021); Kim et al. (2023); Kuo et al. (2022)	Organisation
Green culture (G5)	Organisational values and symbols for fostering environmental sustainability	Harris & Crane (2002); Pham et al. (2018)	
Green welfare approach (G6)	A way to assist environmental management at the firm level (e.g., investment in eco-friendly facilities)	Khatoun et al. (2022); Stankevičiūtė & Savanevičienė (2021)	
Participation (G7)	Recycling and energy savings	Ahmad (2015); Tang et al. (2017)	HR initiative
Paperless office(G8)	The environment of paperless office	Ahmad (2015); West & Berman (2001)	
Green ethical leadership (G9)	Leaders committed to achieving collective goals by engaging in eco-ethical practices	Ahmad et al. (2021); Islam et al. (2021)	Leadership
Green transformational leadership (G10)	Inspiring followers to conduct beyond expected levels of environmental performance	Al-Ghazali et al. (2022); Chen, Chang & Lin (2014)	

study discovered that green transformational leadership positively influences green motivation, opportunity, and ability which, in turn, may positively influence green innovation. It was further highlighted that green innovation influences and encourages environmental performance (Moin et al., 2021). Ultimately, transformational leaders play a motivational role in the organisation (Koo, Kim & Kim, 2017). Thus, it can trigger GHRM practices and empower employees towards working in an environmentally aware and sustainable manner by signalling green behaviour, goals and expectations (Al-Ghazali et al., 2022; Bakri et al., 2023). Overall, Table 1 furnishes an overview of the determinants of GHRM.

III. Methods

A. Sample and Process

Before analysing CFPR as stage three and thematic analysis as stage four, this paper has covered other two stages including a literature review for ascertaining drivers of GHRM as stage one and preliminary analysis as stage two to ensure if variables found in this paper are relevant to the implementation of GHRM in UN offices in South Korea.

As stage two, data sets were collected for preliminary analysis in 2023 from 8 officers or staff involved in HRM in the UN in South Korea. Regarding

Table 2. Respondent characteristics (Stage 3)

Category	Frequency (Number)	Percent (%)	
Time in charge of HRM	Below 3 years	4	50
	3 ~ 5 years	0	0
	6 ~ 8 years	3	37.5
	Over 8 years	1	12.5
	Total	8	100
Job grade	General employee	4	50
	Manager	1	12.5
	Other	3	37.5
	Total	8	100
Gender	Male	4	50
	Female	4	50
	Total	8	100
Age	20s	1	12.5
	30s	5	62.5
	40s	2	25
	50s	0	0
	Over 60s	0	0
	Total	8	100
Corresponding office	Climate Change	3	37.5
	Disaster Risk Reduction	0	0
	Environment	0	0
	Governance	4	50
	Green Growth	0	0
	Human Right	1	12.5
	Other	0	0
	Total	8	100

Table 3. Respondent characteristics (Stage 4)

Experts	Experience in HRM	Environmental experts
Expert 1	+6 years	+3 years
Expert 2	+ 2 years	+6 years

respondents' characteristics, staff from Climate Change, Disaster Risk Reduction, Environment, Governance and Green Growth participated in the survey. The 5-Likert Scale was used, contemplating the mean value of higher than 3 as related to GHRM (Yoo et al., 2024). As a result of preliminary analysis, all the 10 determinants in this paper are relevant to GHRM in the UN in South Korea as all variables were higher than 3.

As stage three, we collected the data sets for CFPR in 2023. Likewise, the data sets were collected from staff in the UN in South Korea, involved in HRM for the analysis of CFPR. In Table 2, respondent characteristics were depicted in stage three.

In stage four, although there is limited accessibility and the number of staff at the UN in South Korea, we collected qualitative data (i.e., open-ended questions) from two experts. In Table 3, expert characteristics were furnished in Table 3.

B. Fuzzy Set Theory

The fuzzy-based technique has been utilised in this paper. Being introduced by Zadeh, the fuzzy-based technique has been widely adopted and employed in different management research (Zadeh, 1996); for either HRM or GHRM, the use of fuzzy-based techniques is also recommended for a robust analysis and finding (Abdullah & Zulkifli, 2015). Triangular Fuzzy Numbers (TFNs) are employed to reflect the evaluation judgement. In addition, the fuzzy operator is adopted to aggregate the evaluation concerning the information of the expert panel. TFN can furnish great advantages in processing the decision-making problem.

C. Linguistic Variable

Coupled with fuzzy-based techniques, linguistic variables can be employed to describe the judgements and evaluation of GHRM determinants (Khatoun et al., 2022). The membership functions can construct a connection between linguistic variables and fuzzy numbers (Shemshadi et al., 2011). The TFNs and corresponding linguistic variables are coupled to deal with the vague information and experts' preferences in this paper.

D. Preference Relations-Based Fuzzy AHP

Diverse types of *fuzzy* AHP exist in the extant literature (Khatoun et al., 2022). Some articles in the literature addressed the inconsistency in *fuzzy* AHP. Apart from the advantages and disadvantages of the fuzzy AHP, the most crucial criticism about most of them is their failure to fulfil inconsistency (Abdullah & Zulkifli, 2015). Obtaining consistency is vital, due to inconsistent comparisons possibly linked to misleading solutions (Rezaei & Ortt, 2013). The topic of fuzzy preference relations has received increasing attention in priority-ranking problems (Rezaei & Ortt, 2013). For a robust ranking, it is crucial to have consistent fuzzy preference relations. Herrar-Viedma et al. (2004) presented a characterisation of the consistency property based on the additive transitivity property of the fuzzy preference relations. Wang & Chen (2008) incorporated the characterisation of the consistency proposed by Herrar-Viedma et al. (2004) into AHP and proposed a method that leads to consistent priority ranking from only $n - 1$ pairwise comparison. Their method consists of two very crucial features: (1) it yields consistent priority ranking and (2) it requires fewer pairwise comparisons.

Hence, the robust method is applied to obtain the weights of GHRM criteria in this paper as follows:

- Step 1. Establish the hierarchy.

A hierarchy is constructed, including the goal and criteria.

- Step 2. Determine the pairwise comparison matrices. The construction of a comparison matrix \tilde{P} for the criteria.

$$\tilde{P} = \begin{matrix} \tilde{P}_{11} & \tilde{P}_{12} & \cdots & \tilde{P}_{1n} \\ \tilde{P}_{21} & \tilde{P}_{22} & \cdots & \tilde{P}_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ \tilde{P}_{n1} & \tilde{P}_{n2} & \cdots & \tilde{P}_{nn} \end{matrix}$$

Where \tilde{p}_{ij} is a fuzzy linguistic variable or its equivalent triangular fuzzy number to show the decision-maker's preference of i over j , as indicated in Table 4. In this step, following Wang & Chen (2008), it is necessary only to fill in $n - 1$ cells of the matrix.

- Step 3. Construct the fuzzy linguistic preference relation decision matrices for the criteria. If, after calculating the pairwise comparisons, the value of some factors of the aggregated don't cover a value between zero and one ($\tilde{p}_{ij} \notin [0, 1]$) the following transformation should be adopted to transform the elements to the interval $[0, 1]$, i.e., $f: [-c, 1 + c] \rightarrow [0, 1]$ where c is the maximum amount of the violation from the interval $[0, 1]$ among the elements of \tilde{P}_{ij} .
- Step 4. Calculate the weights of the criteria as follows: $A_i = 1 / n (\sum_{j=1}^n p_{ij})$

Table 4. Fuzzy preferences and fuzzy numbers

Linguistics variables	Triangular fuzzy numbers
Very Low (VL)	(0, 0, 0.2)
Low (L)	(0, 0.2, 0.4)
Fairly Low (FL)	(0.2, 0.4, 0.6)
Fairly High (FH)	(0.4, 0.6, 0.8)
High (H)	(0.6, 0.8, 1)
Very High (VH)	(0.8, 1, 1)

where A_i is the average and the weight W_i is calculated as follows:

$$W_i = A_i / \sum_{i=1}^n A_i.$$

IV. Results

A. CFPR

For the empirical result of CFPR, the entire procedure for the construction of the decision matrix is illustrated as follows:

- (1) The questionnaire is designed as linguistic variables.
- (2) Convert linguistic variables and compute the average score for each pairwise comparison.
- (3) Construct the initial criteria decision matrix. Table 5 demonstrates the initial value of fuzzy preference ratios in the decision matrix for criteria. The diagonal values are all 0.5 and the defuzzified values are computed according to $x_{ij} = defuzzy \tilde{x}_{ij} = (x_{ij}^L + 4 x_{ij}^M + x_{ij}^U) / 6$
- (4) Compute the rest of each element in the decision matrix (Table 6) according to

$$\begin{aligned} & P_{i(i+1)}^L + P_{(i+1)(i+2)}^L + \cdots + P_{(j-1)j}^L \\ & + P_{ji}^U = \frac{j - i + 1}{2} \quad \forall < j \\ & P_{i(i+1)}^M + P_{(i+1)(i+2)}^M + \cdots + P_{(j-1)j}^M \\ & + P_{ji}^M = \frac{j - i + 1}{2} \quad \forall < j \\ & P_{i(i+1)}^U + P_{(i+1)(i+2)}^U + \cdots + P_{(j-1)j}^U \\ & + P_{ji}^L = \frac{j - i + 1}{2} \quad \forall < j \end{aligned}$$

As the matrix has entries that are not in the interval $[0, 1]$, so the transforming function is applied as below

$$f(x) = (x + k) / (1 + 2k)$$

- (5) Finally, compute the average and weight

according to $A_i = 1 / n (\sum_{j=1}^n p_{ij})$

where A_i is the average and the weight W_i is calculated as follows:

$$W_i = A_i / \sum_{i=1}^n A_i.$$

The complete decision matrix of the criteria is shown in Table 7.

As shown in Table 7, green recruitment (G1) is the most crucial factor affecting the implementation of GHRM within the UN in South Korea. Following this, the importance order is as follows: green training and development (G2); green performance management (G3); green reward (G4); green organisational culture (G5); green welfare approach (G6); green employee participation (G7); green initiatives (G8); green

ethical leadership (G9) and green transformational leadership (G10). As highlighted by Ahmad (2015), for facilitating GHRM, HR practices or systems

Table 7. The Complete decision matrix for the criteria

Criteria	Average	Weight	Rank
C ₁	0.73	0.15	1
C ₂	0.70	0.14	2
C ₃	0.65	0.13	3
C ₄	0.60	0.12	4
C ₅	0.51	0.10	5
C ₆	0.48	0.10	6
C ₇	0.42	0.08	7
C ₈	0.36	0.07	8
C ₉	0.29	0.06	9
C ₁₀	0.23	0.05	10

Table 5. The Initial decision matrix of the criteria

Criteria	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉	C ₁₀
C ₁	0.50	0.66								
C ₂		0.50	0.80							
C ₃			0.50	0.78						
C ₄				0.50	0.81					
C ₅					0.50	0.90				
C ₆						0.50	0.84			
C ₇							0.50	0.85		
C ₈								0.50	0.88	
C ₉									0.50	0.86
C ₁₀										0.50

Table 6. CFPR matrix of criteria

Criteria	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	C ₇	C ₈	C ₉	C ₁₀
C ₁	0.50	0.66	0.96	1.24	1.55	1.95	2.29	2.64	3.02	3.38
C ₂	0.34	0.50	0.80	1.08	1.40	1.80	2.13	2.48	2.86	3.22
C ₃	0.04	0.20	0.50	0.78	1.09	1.49	1.83	2.18	2.56	2.92
C ₄	-0.24	-0.08	0.22	0.50	0.81	1.21	1.55	1.90	2.28	2.64
C ₅	-0.55	-0.40	-0.09	0.19	0.50	0.90	1.24	1.59	1.19	0.85
C ₆	-0.95	-0.80	-0.49	-0.21	0.10	0.50	0.84	1.19	1.56	1.93
C ₇	-1.29	-1.13	-0.83	-0.55	-0.24	0.16	0.50	0.85	1.23	1.59
C ₈	-1.64	-1.48	-1.18	-0.90	-0.59	-0.19	0.15	0.50	0.88	1.24
C ₉	-2.02	-1.86	-1.56	-1.28	-0.96	-0.56	-0.23	0.13	0.50	0.86
C ₁₀	-2.38	-2.22	-1.92	-1.64	-1.33	-0.93	-0.59	-0.24	0.14	0.50

should be aligned to help firms achieve green strategies. Similarly to our findings, recruitment, training, motivation and rewards were underlined. As noted by Jamil et al. (2023), international organisations such as the UN are likely to accentuate environmental sustainability among all employees. As an organisational strategy, recruitment can be regarded as the most vital factor towards GHRM owing to the starting point of incorporating HR initiatives in the UN.

B. Thematic Analysis

In line with the six steps of thematic analysis, including familiarisation with data, grouping codes, searching for themes, reviewing themes, naming themes and production of the report, Table 8 shows the main theme or driving factors towards GHRM (e.g., Braun & Clarke, 2006).

- First step (familiarisation with data): qualitative data sets were repeatedly read.
- Second step (grouping codes): based on the recurring patterns in our data, we grouped codes under subthemes.
- Third step (searching for themes): based on the extant literature, codes and themes or subthemes were matched.
- Fourth step (reviewing themes): subthemes were reviewed and reduced for clarification.
- Fifth step (Naming themes): Themes were determined.
- Sixth step (Reporting): Reporting the emerging themes.

In line with the CFPR analysis, the HR practice dimension, including recruitment, and training and development was mainly highlighted. In the organisational dimension, strategic aspects and technologies were newly suggested at this stage. In the HR initiative dimension, factors supporting staff's commitment to GHRM were found, which is in line with the extant literature (Pham et al., 2018). In the

Table 8. Themes and code

Theme	Subtheme	Code
Determinants of GHRM	HR practice	Training and Development
		Green recruitment (recruitment)
	Organisational	Strategic plans
		Technologies
	HR initiative	Work environment
		Framework
Leadership		Actions
		Management commitment

leadership dimension, management commitment (strategic dedication) was newly suggested instead of existing knowledge, such as transformational leadership (Moin et al., 2021).

V. Discussion

A. Theoretical Implication

First, this paper contributes to the understanding of GHRM in the UN in South Korea. Owing to data access difficulties, we believe that this research covers GHRM for the very first time in the UN in South Korea. As noted by Ren, Tang and Jackson (2018), beyond specific HR practices, multi-level applications may be contemplated for facilitating GHRM. In this study, in addition to HR practices, organisational, HR initiative and leadership dimensions were uniquely covered, being deemed a strategic option available to organisations (Gupta & Jangra, 2024).

Second, among different determinants, we have highlighted the HR practice dimension, including green recruitment as the most vital factor towards the implementation of GHRM. For the implementation of GHRM, aligning HR practices with corporate strategies was captured, particularly in the private sector. When considering our results, the value-based route can be highly linked to GHRM in the UN in South Korea compared to a strategic route for

the corporate strategic model (Millar, Sanyal & Müller-Camen, 2016).

Third, the leadership dimension is regarded as less relevant to GHRM relatively in our analysis. Nonetheless, green ethical leadership is relatively more important than green transformational leadership towards GHRM in the UN in South Korea. Similarly, green ethical leaders who build up eco-friendly communities can be more effective than transformational leaders in green product development in the private sector (Millar, Sanyal & Müller-Camen, 2016). It is worth noting that green transformational leadership can be more relevant to green creativity such as new ideas for green services rather than GHRM (Al-Ghazali et al., 2022; Sidney et al., 2022).

B. Practical Implication

First, HR practitioners or general service roles in the UN in South Korea can refer to our findings to facilitate the implementation of GHRM. By referring to quantitative or qualitative analysis, HR practitioners can establish a long-term plan for facilitating GHRM. As technological development was newly found through thematic analysis, digital supportive culture, Artificial Intelligence (AI) in recruitment, and personalised training can be suggested (Yoo et al., 2024).

Second, regarding green recruitment, the UN in South Korea should capture their green practices and strategies to attract more candidates with green skills and values (Rajabpour, Fathi & Torabi, 2022). Concerning both skills and values, in addition to the awareness of SDGs, HR practitioners should check if candidates know environmental law, sustainability management models and willingness to be involved in HR initiatives. On the other hand, for better green performance, green training and development could be also effective.

Third, for implementing GHRM, ethical leaders can be asked to dedicate themselves to both organisations and employees such as group ethical mentoring, which in turn influences organisational

culture (Walumbwa, Hartnell & Misati, 2017). Ethical leaders should model their behaviour on ethicality, endorsing this throughout the organisation and fostering social responsibility. Thereby, encouraging employees to engage in extra-role behaviours, inciting ethical behaviour, and enabling the organisation to realise objectives founded on sustainability relevant to GHRM (Wu et al., 2021).

C. Limitations and Future Research

Some limitations can be seen, albeit the most vital determinant was determined for the first time in the UN in South Korea to the best of our knowledge. First, regarding the sample size, the application of MCDM should be in the range of 8-45 (Raj et al., 2023). Albeit this research covers eight experts from the UN in South Korea, more data sets can be collected to reinforce the validity of the findings and analysis (Yoo et al., 2024). Second, this study lacks the underlying framework due to its exploratory nature. Thus, other MCDM methods, such as the Decision-Making Trial and Evaluation Laboratory (DEMATEL), can also be employed to develop insights (e.g., a conceptual framework towards GHRM in the UN context). Third, more variables fit for the UN in South Korea should be addressed or discussed, such as factors relevant to cross-culture; this can lower subjectivity and ambiguity (Khatoun et al., 2022). Fourth, as the application of MCDM lacks generalisability, longitudinal studies can be considered to enhance the validity of the findings and analysis (Pereira, Munjal & Nandakumar, 2016). Fifth, the conceptual framework can be discussed and applied for further studies, such as the Ability, Motivation and Opportunity (AMO) theory capturing complex links between individuals and outcomes, to delve into the link between GHRM and its key determinants using different quantitative analytical tools (e.g., regression model). Sixth, the probability sampling approach can be employed to overcome biases in the data sets (Glass & Finley, 2002). Last but not least, although a mixed method was employed, more qualitative data

sets could be collected. In addition, focus group interviews could be employed for depth knowledge of GHRM.

VI. Conclusion

To help HR practitioners facilitate GHRM in the UN in South Korea, a question was raised: what is the crucial driving factor towards GHRM? This study revealed that green recruitment from the HR practice dimension is the most vital factor for facilitating GHRM. Due to the exploratory state of this research using the MCDM method, this study outweighs practical implications. However, based on our analysis, the theoretical framework can be further proposed or developed for the UN context. As it is very rare to find an empirical study (e.g., GHRM) for the UN office, this study newly furnishes both practical and theoretical insights into GHRM for researchers and HR practitioners interested in intergovernmental organisations. By referring to our findings, HR practitioners and leaders in the UN in South Korea can establish a strategic plan for facilitating GHRM.

Conflicts of Interest

No conflicts of interest are involved.

Author Contributions

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References

- Abdullah, L., & Zulkifli, N. (2015). Integration of fuzzy AHP and interval type-2 fuzzy DEMATEL: An application to human resource management. *Expert Systems with Applications*, 42(9), 4397-4409.
- Ahmad, S. (2015). Green human resource management: Policies and practices. *Cogent Business & Management*, 2(1), 1030817.
- Ahmad, S., Islam, T., Sadiq, M., & Kaleem, A. (2021). Promoting green behavior through ethical leadership: a model of green human resource management and environmental knowledge. *Leadership & Organization Development Journal*, 42(4), 531-547.
- Ahmad, I., & Umrani, W. A. (2019). The impact of ethical leadership style on job satisfaction: Mediating role of perception of Green HRM and psychological safety. *Leadership & Organization Development Journal*, 40(5), 534-547.
- Al-Alawneh, R., Othman, M., & Zaid, A. A. (2024). Green HRM impact on environmental performance in higher education with mediating roles of management support and green culture. *International Journal of Organizational Analysis*, 32(6), 1141-1164.
- Al-Ghazali, B. M., Gelaidan, H. M., Shah, S. H. A., & Amjad,

- R. (2022). Green transformational leadership and green creativity? The mediating role of green thinking and green organizational identity in SMEs. *Frontiers in Psychology*, 13, 977998.
- Amrutha, V. N., & Geetha, S. N. (2020). A systematic review on green human resource management: Implications for social sustainability. *Journal of Cleaner Production*, 247, 119131.
- Aust, I., Cooke, F. L., Muller-Camen, M., & Wood, G. (2024). Achieving sustainable development goals through common-good HRM: Context, approach and practice. *German Journal of Human Resource Management*, 38(2), 93-110.
- Bakri, M. H., Al Mazrouei, A. A., Ismail, A. F., Razak, M. I. M., & De Melloc, G. (2023). The Impact of Leadership Styles Among UAE Municipalities Employees. *Global Business & Finance Review*, 28(4), 115-131.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Cheema, S., & Javed, F. (2017). The effects of corporate social responsibility toward green human resource management: The mediating role of sustainable environment. *Cogent Business & Management*, 4(1), 1310012.
- Chen, Y. S., Chang, C. H., & Lin, Y. H. (2014). Green transformational leadership and green performance: The mediation effects of green mindfulness and green self-efficacy. *Sustainability*, 6(10), 6604-6621.
- De Marchi, V. (2012). Environmental innovation and R&D cooperation: Empirical evidence from Spanish manufacturing firms. *Research Policy*, 41(3), 614-623.
- Duvnjak, B., & Kohont, A. (2021). The role of sustainable HRM in sustainable development. *Sustainability*, 13(19), 10668.
- Glass, J. L., & Finley, A. (2002). Coverage and effectiveness of family-responsive workplace policies. *Human Resource Management Review*, 12(3), 313-337.
- Guerci, M., Longoni, A., & Luzzini, D. (2016). Translating stakeholder pressures into environmental performance—the mediating role of green HRM practices. *The International Journal of Human Resource Management*, 27(2), 262-289.
- Guerci, M., Radaelli, G., Siletti, E., Cirella, S., & Rami Shani, A. B. (2015). The impact of human resource management practices and corporate sustainability on organizational ethical climates: An employee perspective. *Journal of Business Ethics*, 126, 325-342.
- Gupta, A., & Jangra, S. (2024). Green human resource management and work engagement: Linking HRM performance attributions. *Sustainable Futures*, 7, 1-12.
- Haddock-Millar, J., Sanyal, C., & Müller-Camen, M. (2016). Green human resource management: A comparative qualitative case study of a United States multinational corporation. *The International Journal of Human Resource Management*, 27(2), 192-211.
- Herrera-Viedma, E., Herrera, F., Chiclana, F., & Luque, M. (2004). Some issues on consistency of fuzzy preference relations. *European Journal of Operational Research*, 154(1), 98-109.
- Hronová, Š., & Špaček, M. (2021). Sustainable HRM practices in corporate reporting. *Economies*, 9(2), 75.
- International Labour Organization. (2018). *World Employment Social Outlook 2018: Greening with jobs*. Geneva: International Labour Organization.
- International Labour Organization. (2022). *Greening Enterprises: Transforming processes and workplaces*. Geneva: International Labour Organization.
- Islam, T., Khan, M. M., Ahmed, I., & Mahmood, K. (2021). Promoting in-role and extra-role green behavior through ethical leadership: mediating role of green HRM and moderating role of individual green values. *International Journal of Manpower*, 42(6), 1102-1123.
- Jamal, T., Zahid, M., Martins, J. M., Mata, M. N., Rahman, H. U., & Mata, P. N. (2021). Perceived green human resource management practices and corporate sustainability: Multigroup analysis and major industries perspectives. *Sustainability*, 13(6), 3045.
- Jamil, S., Zaman, S. I., Kayikci, Y., & Khan, S. A. (2023). The role of green recruitment on organizational sustainability performance: A study within the context of green human resource management. *Sustainability*, 15(21), 15567.
- Joshi, A., Kataria, A., Rastogi, M., Beutell, N. J., Ahmad, S., & Yusliza, M. Y. (2023). Green human resource management in the context of organizational sustainability: A systematic review and research agenda. *Journal of Cleaner Production*, 430, 139713.
- Khatoun, A., Khan, N. A., Parvin, F., Wahid, M. S., Jamal, M. T., & Azhar, S. (2022). Green HRM: Pathway towards environmental sustainability using AHP and FAHP in a nascent parsimony. *International Journal of Manpower*, 43(3), 805-826.
- Kim, M., & Lee, Y. (2023). A Strategic Human Resource Management Approach in Chaebol Hotels. *Global Business & Finance Review*, 28(4), 1.
- Kim, T. T., Kim, W. G., Majeed, S., & Haldorai, K. (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.
- Koo, J. H., Kim, K. T., & Kim, J. H. (2017). The relationship between transformational leadership of environmental NGO leader and trust and organizational commitment. *Global Business & Finance Review (GBFR)*, 22(1), 23-37.
- Kuo, Y. K., Khan, T. I., Islam, S. U., Abdullah, F. Z., Pradana, M., & Kaewsang-On, R. (2022). Impact of green HRM practices on environmental performance: The mediating role of green innovation. *Frontiers in Psychology*, 13, 916723.
- Liu, J., Gao, X., Cao, Y., Mushtaq, N., Chen, J., & Wan, L. (2022). Catalytic effect of green human resource practices on sustainable development goals: can individual values moderate an empirical validation in a developing economy? *Sustainability*, 14(21), 14502.

- Lopez-Cabrales, A., & Valle-Cabrera, R. (2020). Sustainable HRM strategies and employment relationships as drivers of the triple bottom line. *Human Resource Management Review, 30*(3), 100689.
- Moin, M. F., Omar, M. K., Wei, F., Rasheed, M. I., & Hameed, Z. (2021). Green HRM and psychological safety: How transformational leadership drives follower's job satisfaction. *Current Issues in Tourism, 24*(16), 2269-2277.
- Morse, S. (2003). Greening the United Nations' human development index? *Sustainable Development, 11*(4), 183-198.
- Marucci, L., Daddi, T., & Iraldo, F. (2024). Creating environmental performance indicators to assess corporate sustainability and reward employees. *Ecological Indicators, 158*, 111489.
- Molina-Azorin, J. F., López-Gamero, M. D., Tari, J. J., Pereira-Moliner, J., & Pertusa-Ortega, E. M. (2021). Environmental management, human resource management and green human resource management: A literature review. *Administrative Sciences, 11*(2), 48.
- Pereira, V., Munjal, S., & Nandakumar, M. K. (2016). Reverse dependency: A longitudinal case study investigation into headquarter-subsidiary relationship in the context of an emerging economy. *International Studies of Management & Organization, 46*(1), 50-62
- Pham, N. T., Phan, Q. P. T., Tučková, Z., Vo, N., & Nguyen, L. H. (2018). Enhancing the organizational citizenship behavior for the environment: the roles of green training and organizational culture. *Management & Marketing, 13*(4), 1174-1189.
- Raj, A., Dan, A., Vrinda, & Kumar, P. (2023). A comparative study of the feasibility of alternative fuel vehicles for sustainable transportation in India: A hybrid approach of DEMATEL and TOPSIS. *Transportation in Developing Economies, 9*(1), 2.
- Rajabpour, E., Fathi, M. R., & Torabi, M. (2022). Analysis of factors affecting the implementation of green human resource management using a hybrid fuzzy AHP and type-2 fuzzy DEMATEL approach. *Environmental Science and Pollution Research, 29*(32), 48720-48735.
- Ren, S., Tang, G., & E Jackson, S. (2018). Green human resource management research in emergence: A review and future directions. *Asia Pacific Journal of Management, 35*, 769-803.
- Rezaei, J., & Ortt, R. (2013). Supplier segmentation using fuzzy logic. *Industrial Marketing Management, 42*(4), 507-517.
- Shemshadi, A., Shirazi, H., Toreihi, M., & Tarokh, M. J. (2011). A fuzzy VIKOR method for supplier selection based on entropy measure for objective weighting. *Expert Systems with Applications, 38*(10), 12160-12167.
- Sidney, M. T., Wang, N., Nazir, M., Ferasso, M., & Saeed, A. (2022). Continuous effects of green transformational leadership and green employee creativity: A moderating and mediating prospective. *Frontiers in Psychology, 13*, 840019.
- Singh, S. K., Del Giudice, M., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technological Forecasting and Social Change, 150*, 119762.
- Stankevičiūtė, Ž., & Savanevičienė, A. (2021). Can sustainable HRM reduce work-related stress, work-family conflict, and burnout? In *International Perspectives on Employee Engagement* (pp. 88-107). Routledge.
- Strietska-Illina, O., & Strietska-Illina, O. (2011). *Skills for green jobs: A global view: Synthesis report based on 21 country studies*. Internat. Labour Office.
- Tang, G., Chen, Y., Jiang, Y., Paillé, P., & Jia, J. (2017). Green human resource management practices: scale development and validity. *Asia Pacific Journal of Human Resources, 56*(1), 31-55.
- United Nations. (2021). *Asia-Pacific Trade and Investment Report 2021: Accelerating Climate-smart Trade and Investment for Sustainable Development*. New York: United Nations Publication.
- United Nations. (2024). *The Sustainable Development Goals Report 2024*. New York: United Nations publication.
- Veerasamy, U., Joseph, M. S., & Parayitam, S. (2023). Green human resource management and employee green behaviour: Participation and involvement, and training and development as moderators. *South Asian Journal of Human Resources Management, 11*(4), 23220937221144361.
- Walumbwa, F. O., Hartnell, C. A., & Misati, E. (2017). Does ethical leadership enhance group learning behavior? Examining the mediating influence of group ethical conduct, justice climate, and peer justice. *Journal of Business Research, 72*, 14-23.
- Wang, Y. M., Chin, K. S., Poon, G. K. K., & Yang, J. B. (2009). Risk evaluation in failure mode and effects analysis using fuzzy weighted geometric mean. *Expert Systems with Applications, 36*(2), 1195-1207.
- West, J. P., & Berman, E. M. (2001). From traditional to virtual HR: Is the transition occurring in local government? *Review of Public Personnel Administration, 21*(1), 38-64.
- Wu, K. J., Liao, C. J., Tseng, M. L., & Chiu, A. S. (2015). Exploring decisive factors in green supply chain practices under uncertainty. *International Journal of Production Economics, 159*, 147-157.
- Wu, Q., Cherian, J., Samad, S., Comite, U., Hu, H., Gunnlaugsson, S. B., ... Sial, M. S. (2021). The role of CSR and ethical leadership to shape employees' pro-environmental behavior in the era of industry 4.0. A case of the banking sector. *Sustainability, 13*(17), 9773.
- Yoo, J. W., Roh, S., Tripathi, S., & Jang, H. (2024). Digital leadership within large South Korean firms. *Asia Pacific Business Review, 1-23*.
- Zadeh, L. A. (1996). Fuzzy languages and their relation to human and machine intelligence. In *Fuzzy Sets, Fuzzy Logic, And Fuzzy Systems: Selected Papers by Lotfi A Zadeh* (pp. 148-179). University of California Press.