“Greening the UAE workforce: Can green human resource management and domestic environmental regulations support green innovation at the workplace?”

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GREENING THE UAE WORKFORCE: CAN GREEN HUMAN RESOURCE MANAGEMENT AND DOMESTIC ENVIRONMENTAL REGULATIONS SUPPORT GREEN INNOVATION AT THE WORKPLACE?

Abstract

This study aimed to investigate how legal regulations mediated the relationship between green human resource management (GHRM) practices and innovation in organizations. It assessed the impact of GHRM on employees' commitment to environmental sustainability through training and communication. Additionally, the study examined how employees' environmental values influenced their innovative behavior within the organizational context. The study used structural equation modeling and multigroup analysis. A survey was conducted among 246 employees aged 20-59 years and employed in transportation (Etihad Airways and Dubai Silicon Oasis Authority), tourism (Burj Khalifa, Jumeirah Group, Sheraton, and Hilton), energy and utilities (Dubai Electricity and Water Authority, Masdar City, and Abu Dhabi National Oil Company), development (Department of Urban Planning and Municipalities, Research Technology and Innovation Parks, and National Health Authority), and agriculture (Agthia Group, Badia Farms, Al Dahra, and Al Rawabi) sectors. GHRM practices significantly affected employees' attitudes and behaviors, fostering their engagement in sustainability initiatives. Environmentally conscious employees favored creative and sustainable work practices. Domestic legal regulations and organizational practices enhanced the innovative response. Moreover, younger pro-environmentalist employees demonstrated increased receptivity to GHRM practices compared to older employees. In conclusion, GHRM contributed to economic diversification in the UAE by fostering a workforce skilled in sustainable practices, attracting talent to support emerging industries, aligning with economic reforms, and enhancing the overall reputation of the country as a hub for sustainable and diversified economic activities.

Keywords corporate culture, GHRM, innovation, organizational behavior

JEL Classification M14, M54, Q55

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INTRODUCTION

The resources stakeholders allocate to sustainability efforts could be better utilized to enhance their core organizations' business performance, enabling them to thrive and remain competitive in the market (Chams & García-Blandón, 2019; Potrich et al., 2022). A careful balance between adopting sustainability initiatives and maintaining efficient growth is vital (Macini et al., 2022). Although some organizations pretend to be proactively sustainable in practices to project a positive image, attract charming brand perception, foster customer loyalty, and mitigate the risk of legal actions against ecology-oriented negligence associated with environmental negligence (T. Islam et al., 2023; Kousheshi et al., 2020), efficient green human resource management (GHRM) can help with upgrading. Various practices such as

eco-training, green recruitment, and environmental communication within the organization prompt GHRM to effect real changes (Fernandes & Machado, 2022; Raza & Khan, 2022).

Environmentally conscious employees may be more inclined to engage in creative and sustainable work practices (AlNaqbi et al., 2024). The impact of legal regulations and organizational practices on organizational innovation is debatable, as younger employees are purportedly more receptive to environmentally conscious values, affecting the adoption of GHRM practices. The influence of governmental regulations and subsidies on businesses' prioritization of GHRM practices depends on organizational culture and the feasibility of integrating green practices within human resource management.

1. LITERATURE REVIEW AND HYPOTHESES

Green human resource management (GHRM) has emerged as a critical driver in shaping organizational sustainability by influencing employees' attitudes and behaviors. The research explores the multifaceted impact of GHRM practices on sustainability, highlighting key elements such as compliance with domestic environmental regulations, innovation in HRM practices, green commitment drivers, and the interplay between GHRM and tangible outcomes. Researchers also argue whether organizations can maximize cost savings through resource efficiency, enhance corporate reputation, improve employee morale and retention, and orient greater resilience to environmental risks through applying GHRM practices.

GHRM practices contribute to molding employees' attitudes and behaviors toward sustainability. This influence is further accentuated by leadership styles that actively support environmental initiatives, along with strategies that account for gender-based dynamics.

Organizations vary in their structures, industries, and objectives. What proves effective for one organization may not apply to another. While customizing HRM practices is crucial, implementing standardized practices promotes fairness, equity, and efficiency across sectors (AlNaqbi et al., 2024). Innovating HRM practices allows organizations to leverage technological advancements, such as AI-driven recruitment tools, remote work solutions, and data analytics, to enhance efficiency and effectiveness in a rapidly changing business landscape. It enables addressing cultural sensitivities, legal compliance, and market-specific talent demands while maintaining a standardized foundation (Budhwar et al., 2022; Piwowar-Sulej, 2021).

Employees' propensity toward engaging in green innovative workplace behavior is influenced by their capability to undertake environmentally friendly tasks, their motivation to partake in pro-environmental activities, and the support they receive from the organization to effectively carry out green tasks. GHRM practices, such as providing training and development opportunities on sustainable management, can enhance employees' capabilities. When organizations prioritize and facilitate green initiatives, employees feel motivated, encouraging them to contribute to environmental sustainability efforts within the organization (Khatoon et al., 2021).

Commitment drives employees to exert additional effort to achieve the organization's green objectives, which is influenced by a blend of psychological, behavioral, and motivational factors. Intrinsic motivation, exemplified by a shared sense of purpose and psychological factors, such as a sense of impact and efficacy and a sense of personal responsibility, contribute to motivating employees to invest discretionary effort in environmental initiatives. Extrinsic motivation includes adherence to policies and governmental regulations, which vary across countries and between international and domestic levels (Garg, 2021; Ike et al., 2019; Javeed et al., 2023). Domestic regulations play a pivotal role in either supporting or hindering compliance efforts. As employees commit to environmental goals, they encourage a profound personal connection and alignment with the organization's values and sustainability objectives (Larson & Lach, 2008; Râmniceanu, 2022). This commitment enhances their awareness and belief

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in the significance of green objectives, fostering a sense of ownership and responsibility among the workforce (Javeed et al., 2023).

Green commitment encompasses employees' willingness and dedication to participating in environmentally sustainable behaviors and activities within the workplace (Appelbaum et al., 2000; Bos-Nehles et al., 2013). It reflects an individual's beliefs, attitudes, and values regarding environmental issues, which influence their actions and behaviors related to sustainability (Khan et al., 2022). GHRM plays a role in shaping green commitment by influencing the organizational context and employee behaviors (Iftikar et al., 2022). The impact of GHRM practices cultivates a stronger sense of green commitment among employees (Ali et al., 2022).

Domestic ecological regulations involve assessing how well they address environmental concerns in the industry and gauging respondents' perceptions of their supportiveness for better sustainable practices within the organization. The evaluation of the clarity and understandability of these regulations is contingent on the country-specific criteria. These regulations also influence decision-making processes related to environmental practices within the organization, aiming to contribute positively to the overall environmental performance (Ren et al., 2018). Moreover, they are expected to encourage innovation and the adoption of environmentally friendly practices within the industry. The effectiveness of enforcement mechanisms associated with domestic ecological regulations adds another dimension to their impact (Fang & Shao, 2023; Zhang, 2023).

The indicators of the domestic environmental regulations included the effectiveness in addressing environmental concerns (Choi & Johnson, 2019), regulations support for sustainable practices (Etse et al., 2022), clarity and understandability for compliance, and the effect of environmental regulations on decision-making (Niu et al., 2022). Moreover, they comprise the impact of environmental regulations on overall environmental performance (Rubashkina et al., 2015; Zhou et al., 2024) and the effect of environmental regulations on innovation and adoption (Zhang & Vigne, 2021).

The green transformation in economically developed regions can displace unskilled labor, primarily due to shifts in production processes, increased automation, or a change in the skills demanded by the evolving industry (Borges et al., 2021; Malik & Garg, 2020; Raisch & Krakowski, 2021). GHRM aims to equip displaced unskilled workers with the skills necessary to thrive in the transformed, green-oriented employment landscape (Andeobu et al., 2022; D'Netto et al., 2014; Pataki-Bittó & Németh, 2017). Successful employee remobilization in the relocation of pollution-emitting industries is contingent upon the workforce's psychological readiness and their proactive, pro-environmental orientation (Wojtczuk-Turek & Turek, 2015). Employees must be mentally prepared for the changes associated with the relocation, which may include adjustments in working conditions, job roles, and overall organizational culture (Adjei-Bamfo et al., 2020; Jabbour, 2011).

The link between GHRM practices and tangible outcomes, particularly improved environmental and business performance, includes diverse organizational contexts, purpose, time lag in outcomes, metrics and reporting, market dynamics, regulatory changes, and technological advancements (A. Islam et al., 2023; Rizzi et al., 2023; Veerasamy et al., 2023). The success of GHRM practices often relies on employees adopting and internalizing environmentally friendly behaviors. Where technological advancements in green practices are lagging, organizations face higher initial implementation costs without immediate tangible benefits (Hu et al., 2023). However, the success of GHRM practices varies depending on the level of environmental awareness among employees and their willingness to embrace sustainable behaviors. Logging small eco-friendly actions like carpooling, reducing paper usage, or using reusable containers are good kickstarts. They share innovative ideas and collaborate on projects, showcasing the company's commitment to sustainability (Aboramadan, 2022; Saeed et al., 2022). Employees opt to convert their digital tokens into discounts or cashback offers when making online purchases. Organizations can hire freelance experts in green technologies, environmental compliance, or sustainable supply chain management to provide targeted guidance and support (Song et al., 2022).

This study aimed to explore the relationship between GHRM and the UAE legal regulations, employees' innovative behavior, employees' green commitment, and possible moderating covariates of GHRM.

Accordingly, this study proposes the following hypotheses:

H1a: GHRM positively affects domestic regulations.

H1b: GHRM positively affects green innovative work behavior.

H1c: GHRM positively affects green commitment.

H2a: Domestic regulations positively affect green commitment.

H2b: Domestic regulations positively affect green innovative work behavior.

H3: Green commitment positively affects green innovative work behavior.

H4: Green commitment moderates the relationship between domestic regulations and green innovative work behavior.

H5a: Age moderates the relationship between GHRM and green innovative work behavior.

H5b: Age moderates the relationship between domestic regulations and green innovative work behavior.

H5c: Age moderates the relationship between green commitment and green innovative work behavior.

2. METHOD

Implementing GHRM practices in service sectors prompts environmental enhancements, making this context highly pertinent and influential. Data were gathered from employees across various sectors in the UAE, including transportation (Etihad Airways and Dubai Silicon Oasis Authority), tourism (Burj Khalifa, Jumeirah Group, Sheraton, and Hilton), energy and utilities (Dubai Electricity and Water Authority, Masdar city, and Abu Dhabi National Oil Company), development (Department of Urban Planning and Municipalities, Research Technology and Innovation Parks, National Health Authority), and agriculture (Agthia Group, Badia Farms, Al Dahra and Al Rawabi) sectors. The variety in educational backgrounds, gender distribution, work experience, and sectoral representation among participants aimed to represent the diverse workforce. Pre-notification emails were sent a few days prior to distributing the actual survey invitation, providing a direct link to the SurveyMonkey questionnaire. Accessing the link led participants to an e-consent form outlining the study's purpose, procedures, and rights. The e-consent also clarified that IP addresses would be used for verification, and participation in the survey signified consent. A total of 380 online questionnaires were dispatched, and 246 complete responses were received. By including respondents from various sectors, the study inferred how green HRM practices and environmental regulations are perceived and implemented across different industries.

A five-point Likert scale (one – "strongly disagree" to five – "strongly agree") was utilized for all items where participants expressed their level of agreement or disagreement with the provided statements. The following outlines each instrument used to assess the construct. GHRM was evaluated through four dimensions: green recruitment and selection (four items), green training and development (five items), green performance management and appraisal (three items), and green compensation and rewards (three items), following Yusliza et al. (2019). Green commitment to the environment was gauged using three items, exploring how individual beliefs, organizational values, managerial support, and employee commitment may influence environmentally responsible behaviors at work. Control variables included demographics, organizational tenure and size, and industry. Green innovative work behavior was assessed through six items developed by Scott and Bruce (1994), with the survey adopted in recent studies linking this scale to GHRM (Sharma et al., 2024). The domestic environmental regulations survey was developed based on collective insights from previous studies on environmental regulations effectiveness and matriculations (Fang & Shao, 2023; Pan et al., 2023; Zhou et al., 2024). Figure 1 illustrates the conceptual model.

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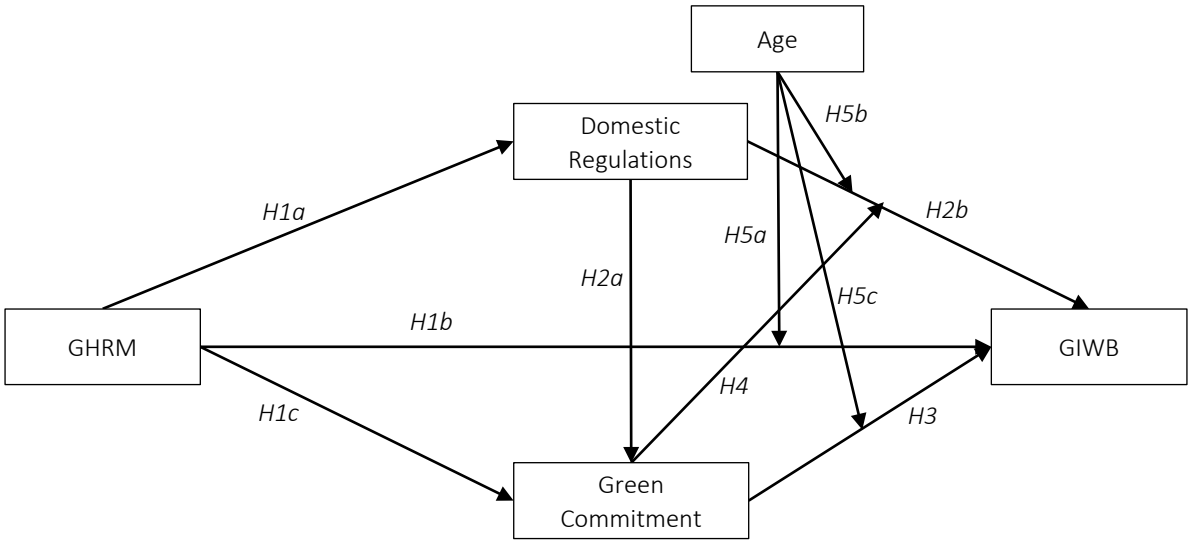

Note: GIWB = green innovative work behavior.

Figure 1. Proposed model

3. RESULTS

Structural equation modeling (SEM) is employed to investigate the interconnections between domestic regulations, GHRM, green commitment, and green innovative work behavior. Additionally, a multigroup analysis based on demographic factors is conducted to evaluate potential differences across age groups. Table 1 shows the demographic characteristics.

Table 1. Participants' demographics

Characteristic	Incidence	Percentage
Age, years		
20-29	74	42.8%
30-39	104	15.2%
40-49	37	7.8%
50-59	41	11.5%
Education		
University/High school	35	41.6%
Bachelor's degree	96	39.5%
Master's degree	35	14.4%
Doctorate degree	24	4.5%
Gender		
Female	116	47.5%
Male	130	52.5%
Experience		
1-3 years	34	13.8%
4-9 years	116	47%
More than 10 years	96	39.2%
Sector		
Energy and utilities sector	30	12%
Transportation sector	78	32.5%
Development sector	36	14.5%
Tourism sector	60	23%
Agriculture sector	42	16%

Note: N = 246.

SEM was applied to study the cause-effect relationships between the defined constructs. Tables 2 and 3 display the reliability and validity measures, while Table 4 demonstrates the outer loadings and VIF values.

Table 3. Fornell's matrix (Validity)

Construct	1	2	3	4
Domestic regulations	0.869			
GHRM	0.74	0.924		
Green innovative work behavior	0.804	0.856	0.898	
Green commitment	0.849	0.868	0.77	0.893

Table 2. Reliability measures

Construct	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Domestic regulations	0.916	0.917	0.938	0.752
GHRM	0.94	0.946	0.947	0.647
Green innovative work behavior	0.922	0.924	0.939	0.719
Green commitment	0.813	0.824	0.889	0.728

Table 4. Outer loading and VIF

Indicator	Outer loading	VIF	Outer weight
DR1	0.909	3.755	0.242
DR2	0.903	3.967	0.231
DR3	0.884	3.38	0.229
DR4	0.859	2.85	0.221
DR5	0.772	1.775	0.231
GHRM1	0.785	4.991	0.101
GHRM2	0.829	5.156	0.105
GHRM3	0.778	3.016	0.099
GHRM4	0.721	2.171	0.085
GHRM5	0.758	3.096	0.093
GHRM6	0.725	3.896	0.087
GHRM7	0.769	4.12	0.093
GHRM8	0.629	5.415	0.069
GHRM9	0.617	5.604	0.062
GHRM10	0.761	4.928	0.086
GHRM11	0.672	4.505	0.065
GHRM12	0.596	1.891	0.079
GHRM13	0.792	3.692	0.106
GHRM14	0.799	2.919	0.102
GHRM15	0.811	3.921	0.108
GIWB1	0.892	4.237	0.215
GIWB2	0.86	3.664	0.206
GIWB3	0.832	2.341	0.201
GIWB4	0.843	3.058	0.194
GIWB5	0.825	2.902	0.176
GIWB6	0.834	2.444	0.185
GrCm1	0.888	1.977	0.438
GrCm2	0.842	1.83	0.357
GrCm3	0.828	1.655	0.375

Note: DR = domestic regulations; GIWB = green innovative work behavior; GrCm = green commitment.

H1a posited that GHRM positively influences domestic regulations. The indicators of GHRM demonstrated high reliability. A significant positive direct relationship was observed between GHRM and domestic regulations, indicating that organizations with strong green HR practices tend to comply stringently with domestic environmental regulations ($\beta = 0.924$, $P < 0.000$). H1b stated that GHRM positively influences green innovative work behavior. The indicators of GHRM exhibited high reliability. A significant positive direct relationship was observed between GHRM and green innovative work behavior, suggesting that organizations with robust green HR practices prompt innovative environmentally friendly behaviors among employees ($\beta = 0.719$, $P < 0.000$). H1c posited that GHRM positively influences green commitment. The indicators of GHRM demonstrated high reliability. A significant positive direct relationship was observed between GHRM and green commitment, indicating that organizations with strong green HR practices tend to foster a higher level of commitment to environmental sustainability among employees ($\beta = 0.571$, $P < 0.000$). Therefore, H1a, H1b, and H1c are supported, as each relationship was found to be statistically significant.

H2a stated that domestic regulations positively influence green commitment. The indicators of domestic regulations exhibited high reliability. A significant positive direct relationship was observed between domestic regulations and green commitment, indicating that stringent domestic regulations positively influence employees' commitment to environmentally friendly practices ($\beta = 0.321$, $P = 0.091$). Thus, H2a was rejected. H2b stated that domestic regulations positively influence green innovative work behavior. A significant positive direct relationship was observed ($\beta = 0.055$, $P < 0.000$). Therefore, H2 was supported.

The third hypothesis stated that green commitment is positively influencing green innovative work behavior. The indicators of green commitment exhibited acceptable reliability. A significant positive direct relationship was observed between green commitment and green innovative work behavior ($\beta = 0.101$, $P = 0.021$), indicating that employees who are more committed to environmentally friendly practices are more likely to engage in innovative green behaviors at work.

The fourth hypothesis suggested that green commitment moderates the relationship between domestic regulations and green innovative work behavior. The moderation analysis revealed a significant interaction effect ($\beta = 0.032$, $P < 0.000$), indicating that the strength of the relationship between domestic regulations and green innovative work behavior is influenced by the level of green commitment.

The multigroup analysis demonstrated that age influences the relationships among domestic regulations, GHRM, green commitment, and green innovative work behavior. H5a proposed that age moderates the relationship between GHRM and green innovative work behavior. The moderation analysis demonstrated a significant interaction effect, suggesting that the relationship between GHRM and green innovative work behavior varies across different age groups (β

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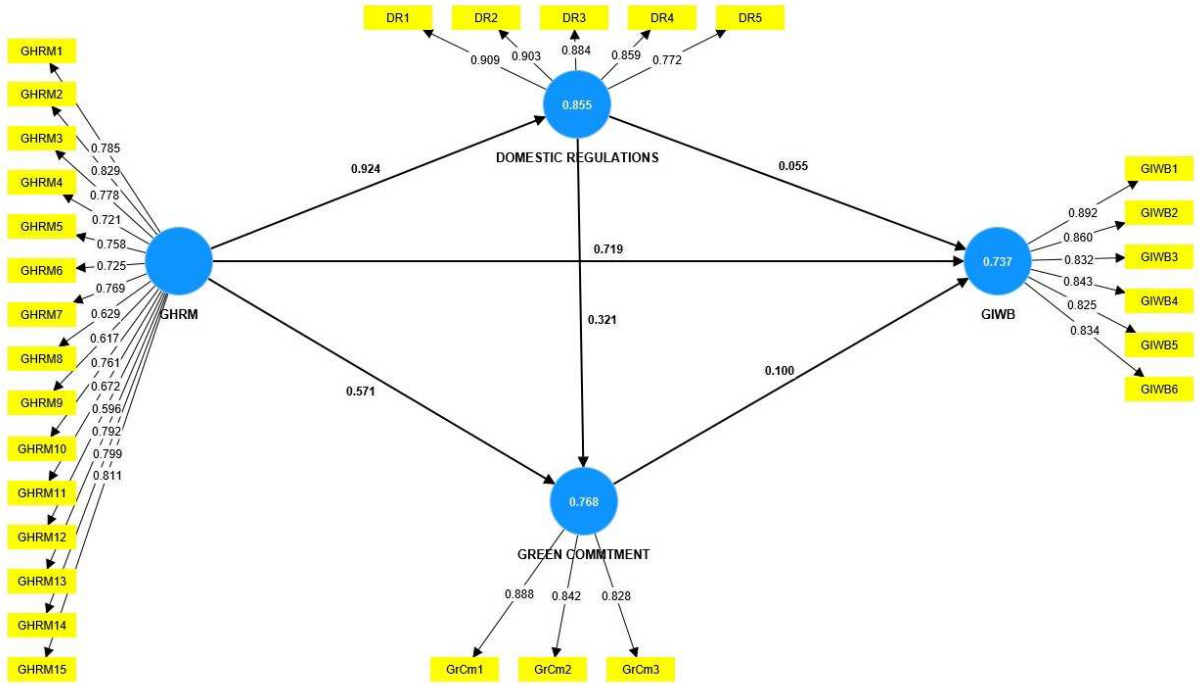

Note: GIWB = green innovative work behavior.

Figure 2. Structural model

= 0.051, $P < 0.000$). H5b stated that age moderates the relationship between domestic regulations and green innovative work behavior. The moderation analysis revealed a significant interaction effect, indicating that the strength of the relationship between domestic regulations and green innovative work behavior varies among different age groups (β = 0.034, $P < 0.000$). H5c suggested that age moderates the relationship between green commitment and green innovative work behavior. The moderation analysis demonstrated a significant interaction effect, suggesting that the relationship between green commitment and green innovative work behavior varies across different age groups (β = 0.032, $P < 0.000$). Therefore, H5a, H5b, and H5c are supported, as each relationship and moderation effect were found to be statistically significant. These findings provide insights into the moderating role of green commitment and demographic variables in shaping the relationships within the proposed structural model.

Discriminant validity was evaluated through Fornell's matrix of correlations. Subsequently, the postulated hypothesis was tested using structural equation modeling (SEM) with SmartPLS version 4.0.9.8. The validity of the structural model was examined through the bootstrapping procedure, focusing on the statistical significance of each hypothesized path between the latent variables.

The assessment of the structural model involved several key parameters. The explanatory power of the constructs was gauged by the *R2* value, while the predictive relevance was measured using *Q2*. An *R2* value as low as 0.10 was deemed acceptable, indicating a satisfactory degree of variance explained by the model. Additionally, the root mean square theta served as a criterion to evaluate the overall acceptance of the model.

A standardized root mean residual value of 0.077 is considered good, suggesting a relatively close fit between the model and the observed data. The Chi-Square (χ^2) value of 478.881 is a measure of how well the model fits the data. The normed fit index (NFI) has a value of 0.929, which is above the commonly recommended threshold of 0.90 for a good model fit. Values closer to 1.0 indicate a better fit, and the provided NFI suggests a favorable fit for the model. The root mean square theta (RMS Theta) value of 0.128 is within an acceptable range. Therefore, the model is accepted. Figure 2 shows the structural model, and Table 5 concludes the hypotheses testing results.

Table 5. Hypotheses validation

Hypothesis	B	Mean	SD	T	P	Validation
H1a. GHRM positively affects domestic regulations.	0.924	0.925	0.009	17.942	0.000	Supported
H1b. GHRM positively affects green innovative work behavior.	0.719	0.724	0.117	6.151	0.000	Supported
H1c. GHRM positively affects green commitment.	0.571	0.571	0.099	5.745	0.000	Supported
H2a. Domestic regulations positively affect green commitment.	0.055	0.051	0.101	0.538	0.091	Rejected
H2b. Domestic regulations positively affect green innovative work behavior.	0.321	0.321	0.096	3.344	0.001	Supported
H3. Green commitment positively affects green innovative work behavior.	0.1	0.099	0.081	1.242	0.021	Supported
H4. Green commitment moderates the relationship between domestic regulations and green innovative work behavior.	0.032	0.329	0.098	3.429	0.000	Supported
H5a. Age moderates the relationship between GHRM and green innovative work behavior.	0.051	0.128	0.009	10.691	0.000	Supported
H5b. Age moderates the relationship between domestic regulations and green innovative work behavior.	0.034	0.230	0.120	6.308	0.000	Supported
H5c. Age moderates the relationship between green commitment and green innovative work behavior.	0.032	0.380	0.102	5.891	0.000	Supported

4. DISCUSSION

GHRM aids in bolstering employees' competencies by equipping them with the essential knowledge, skills, and capacities required for participating in environmentally conscientious behaviors and practices. Employees' proactive engagement in overseeing a company's environmental footprint demonstrates their voluntary dedication to environmental matters within the workplace. This commitment is shaped by a combination of individual, organizational, and supervisory factors (Mishra et al., 2014; Raineri & Paillé, 2016). Age mediated the relationship between GHRM and green innovative work behavior. Pertinently, individuals from different age groups may hold diverse values and preferences regarding environmental sustainability. It was reported that geriatric perforation tends to make healthier decisions (Tomasović Mrčela et al., 2015). However, this study is the first to report that young employees are more into greening than middle-aged and senior employees at non-top management.

GHRM practices, encompassing training programs on environmental sustainability and the inclusion of green criteria in performance evaluations, emerge as influential factors across different sectors. This was established in the business literature (Abbas et al., 2022; Bahuguna et al., 2023; Ojo et al., 2022). Environmentally conscious employees exhibit a greater inclination toward creative and sustainable work practices. The interplay between legal regulations and organizational practices indicates that stringent regulations may enhance the innovative response of organizations. Moreover, younger employees, who are more aligned with environmentally conscious values, demonstrate increased receptivity to GHRM practices.

CONCLUSION

This study investigated the relationships between green human resource management (GHRM), domestic regulations, green commitment, and green innovative work behavior, with a particular focus on the moderating role of age. The results showed positive relationships between GHRM and domestic regulations, green innovative work behavior, and green commitment. Organizations with strong GHRM practices exhibited higher compliance with domestic regulations and encouraged a greater commitment to environmental sustainability among employees. Green commitment moderates the relationship between domestic regulations and green innovative work behavior. GHRM practices were found to enhance employees' abilities. The study suggests that organizations can promote green commitment and innovative behaviors through effective GHRM practices, aligning with regulatory frameworks. Age emerged as a mediator in the relationship between GHRM

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and green innovative work behavior. The study highlighted that age groups respond differently to GHRM practices, with younger employees demonstrating higher receptivity to environmental initiatives.

Nevertheless, the study was conducted in the UAE, and generalizability to different industries or regions may be limited. Because the cross-sectional nature of the data restricts causal inference, future longitudinal studies could provide deeper insights. Still, the findings offer practical implications for organizations to integrate sustainable practices into their HRM strategies and emphasize the need to consider the age of employees as a determinant of greening the workplace.

AUTHOR CONTRIBUTIONS

Conceptualization: Eman AlNaqbi.
Data curation: Eman AlNaqbi.
Formal analysis: Eman AlNaqbi.
Investigation: Eman AlNaqbi, Faridahwati Mohd Shamsudin.
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Supervision: Faridahwati Mohd Shamsudin.
Validation: Eman AlNaqbi.
Visualization: Eman AlNaqbi, Faridahwati Mohd Shamsudin.
Writing – original draft: Eman AlNaqbi.
Writing – review & editing: Eman AlNaqbi, Faridahwati Mohd Shamsudin.

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