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# The Impact of Green Human Resource Management on the Resilience of Higher Education Institutions in China

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**Abstract**

In recent years, as the pressure on higher education institutions to shoulder the dual carbon goals and the mission of sustainable development has grown increasingly intense, green human resource management (GHRM) came into being and is becoming more and more popular. Meanwhile, resilience denotes the capacity of higher education institutions (HEIs) to absorb shocks, maintain core functions, achieve rapid recovery and facilitate transformation when confronting sudden crises, structural disruptions or prolonged uncertainty. Consequently, exploring the Impact of GHRM on the HEIs resilience holds significant importance for advancing the sustainability of Chinese HEIs. Previous researchers found that pro-environmental behaviour, green human capital performance, green innovation mediated the relationship between GHRM and HEIs resilience both in environmental, organizational and learning dimensions. This study employs the Ability, Motivation, Opportunity (AMO) Theory in constructing its theoretical framework. Statistical analysis is conducted on data from 336 valid survey responses completed by faculty in Chinese HEIs, utilizing the software of SPSS and SmartPLS. Ultimately, it is revealed that GHRM has a positive effect on HEIs resilience, mediated by pro-environmental behaviour, green human capital performance, green innovation. While existing research on the intersection of GHRM and HEIs resilience remains limited, many HEIs are facing issues of insufficient resilience, such as inadequate consensus on sustainable development principles and failure to incorporate green practices into performance assessing metrics. The findings hold implications for the Chinese HEIs in refining GHRM strategies, encouraging faculty to enhance their green behaviour and improve HEIs' environmental, organizational and learning resilience.

**Keywords**: Green Human Resource Management, Pro-environmental Behaviour, Green Human Capital Performance, Green Innovation, HEIs Resilience

## Introduction

Resilience denotes the capacity of higher education institutions (HEIs) to absorb shocks, maintain core functions, achieve rapid recovery and facilitate transformation when confronting sudden crises, structural disruptions or prolonged uncertainty. It encompasses both organizational-level emergency response and recovery mechanisms, alongside adaptive capabilities across multiple dimensions including teaching, research, finance, digitalization and social responsibility (DECART, 2025). Contemporary campuses of HEIs, functioning as "miniature cities" that aggregate diverse functional elements such as industry-academia-research collaboration, interpersonal interaction, knowledge dissemination, and social services, face increasingly complex sustainability challenges amid uncertainties and risks stemming from societal, economic, and environmental factors. Against this backdrop, the development of resilient higher education institutions has emerged as a new research focus within the field of campus management.

Meanwhile, green human resource management (GHRM) came into being and grew increasingly popular. GHRM is a systematic approach that embeds environmental sustainability principles throughout all stages of human resource processes. It aims to guide employees towards adopting green behaviours through HR mechanisms such as recruitment, training, performance management, and incentives, thereby helping organizations achieve environmental, economic, and social triple bottom line benefits (Mudaliar and Agrawal, 2025).

Although existing research on the intersection of GHRM and HEIs resilience remains limited, existing studies have demonstrated that GHRM can influence staff performance and sustainable development within HEIs (Abbas et al., 2022; Alanazi and Yusof, 2025). The increasing global concern for the environment has forced organizations to adopt GHRM practices including HEIs. In HEIs, regarded as knowledge-intensive organizations, GHRM serves not merely as a means to reduce resource consumption, but also as a vital lever for cultivating green values among staff and students, thereby underpinning the long-term sustainability goals (Jumiati and Toaha, 2025).

Currently, many HEIs face issues of insufficient resilience, such as inadequate consensus on sustainable development principles and failure to incorporate green practices into performance assessing metrics (Jumiati and Toaha, 2025); insufficiently systematic green education framework and lacked green concept standards in initial stages of certain projects (Zhang and He, 2023); and weak cross-departmental coordination (Zhang, 2023). These challenges are intrinsically linked to GRHM mechanisms. Obviously, exploring HEIs Resilience among universities will help HEIs to recognize the factors limiting their development, related to sustainability.

This research aims to explore how GHRM influence the HEIs resilience in China. The developed questions were listed as following:

1. Does GHRM have a positive impact on employee PEB, green human capital performance and green innovation in Chinese HEIs?
2. Do employee PEB, green human capital performance and green innovation have positive impacts with HEIs resilience in China?

3. Do employee PEB, green human capital performance and green innovation mediate the relationship between GHRM and HEIs resilience?

This study selects HEIs in Jiangxi Province, China as its research sample for the following reasons. Firstly, Jiangxi Province is representative of the "majority" of China's provinces. Among China's 34 provincial-level administrative regions, the vast majority, like Jiangxi, possess one or two double first-class universities alongside a number of provincial key and ordinary universities. Provinces or municipalities with strong higher education systems, such as Beijing, Shanghai, Jiangsu, and Hubei, constitute a minority. Consequently, studying Jiangxi better reflects the prevailing conditions of higher education in China's mainstream provinces. The second reason is studying Jiangxi enables more effective focus on common issues. Jiangxi is situated in central China and is classified as a 'developing' province. The research theme concerns GHRM and HEIs resilience. Such management practices and organizational capabilities may prove more critical and sensitive for relatively resource-constrained 'developing' universities (such as those in Jiangxi). In contrast, double first-class universities with abundant resources may exhibit lower sensitivity to resource fluctuations. Consequently, the relational mechanisms identified within the Jiangxi sample may better illuminate the core pathways and key challenges for enhancing resilience under resource constraints across China's broader higher education landscape. This offers stronger practical guidance for the majority of Chinese HEIs.

**Literature Review**

*Green Human Resource Management (GRHM)*

When employees perceive the human resource management (HRM) practices implemented by the organization, they consciously align their work attitudes and behaviours with this standard and create a more harmonious employee relations climate, which in turn helps the organization to operate in an environmentally friendly environment and achieve resilience. Combined with green recruitment, green selection, green training, employee green performance assessment, green rewards and green employee relations (Jumiati and Toaha, 2025), GHRM is increasingly being recognized as an important practice for implementing green practices that enhance environmental performance for long-term development (Dragomir, 2020; Ren, Tang, & Jackson, 2018). Thus, it is applied in various researching fields, including sustainable recruitment, environmental training, and performance management that support environmentally friendly practices (Siburian and Sugiarto, 2022).

According to Jumiati and Toaha (2025), green recruitment encompasses the following: incorporating environmental awareness requirements into job advertisements and role descriptions; prioritizing candidates with green project experience; etc. Green selection refers to assessing candidates' knowledge of sustainability and behavioural tendencies through interviews and evaluations. Green training involves delivering specialized courses on green management, low-carbon technologies, and energy conservation; encouraging staff participation in institutional green initiatives. Moreover, in order to develop an employee green performance assessment system, environmentally conscious actions (such as paper conservation and participation in waste sorting) are incorporated into performance evaluation metrics. Green rewards involve incentivizing eco-friendly conduct through commendations, green incentives, and green innovation funds. Finally, green employee

relations entails establishing green cultural platforms to encourage staff environmental suggestions, alongside organizing volunteer initiatives and workplace greening activities; etc.

*Pro-environmental Behaviour (PEB)*

Defined as 'any actions that can protect the environment as a whole and/or a specific ecosystem from the destructive effects of human activities' (Ghazali et al., 2019), PEB refers to the green-, sustainable-, or environmentally-friendly (eco-friendly) actions (Krajhanzl, 2010) taken by individuals or groups to reduce negative impacts on the natural environment or even generate positive environmental benefits. This encompasses energy and water conservation, waste sorting and recycling, eco-friendly travel, purchasing environmentally friendly products, and participating in environmental public welfare activities.

Previous researches indicate that PEB is influenced by numerous factors. Ecological value and altruistic value positively promote PEB (Luo and Kim, 2025); cognitive enhancement and emotional motivation serve as prerequisites for behavioural intention (Tusyanah et al., 2024); positive expectations from others and the community significantly enhance behavioural intention (Vinothkumar, 2021); structural factors such as incentive/penalty mechanisms and information feedback provide external support for behaviour (Yang et al., 2024).

*Green Human Capital Performance*

As a vital internal resource for undertaking green transformation of an organization, green human capital performance refers to the behavioural performance on knowledge, skills, experience, values, and behavioural tendencies that employees possess in relation to environmental sustainability, including individuals' cognitive and practical capabilities regarding ecological conservation and environmental management (Andini and Harsono, 2024).

Its content encompasses two dimensions: knowledge and practice. Within this framework, green knowledge refers to the internal processes of acquisition, sharing, integration, and internalization within an organization, forming the foundation of employees' green competencies (Z. Wang et al., 2023). Meanwhile, green recruitment, training, performance appraisal, and incentive schemes constitute the practical elements. By embedding green values throughout the entire human resources process, these directly influence employees' green behaviours and the organization's environmental performance (Montalvo-Falcón et al., 2023). Multiple empirical studies have demonstrated that green human capital significantly enhances an organization's environmental performance, manifesting in reduced emissions and improved resource efficiency (Andini and Harsono, 2024). Furthermore, it exerts a positive influence on sustainable organizational performance (Nawangsari et al., 2025). These constitute vital indicators for gauging institutional resilience.

At the HEIs level, green human capital performance is typically reflected in three aspects: (1) green teaching and research outputs (number of green courses, green research projects, green papers/patents); (2) green campus operations (energy conservation, carbon emission reduction, waste recycling rates); (3) green culture and commitment (environmental behaviours among staff and students, engagement in green volunteering).

*Green Innovation*

Green Innovation refers to the implementation of resource conservation, pollution reduction and value creation through green enhancements in technology, products, processes or management approaches. Employee green innovation encompasses both green creativity—the generation of novel, viable environmental concepts (Lubis et al., 2025), and green innovation behaviour—the specific actions taken by staff towards ecological sustainability objectives when developing, applying or introducing new solutions (Zhu et al., 2022). Serving as a vital internal driver for organizations to achieve sustainable development and enhance environmental performance, green innovation contributes positively to institutional resilience and sustainable development.

*HEIs Resilience*

The resilience denotes an institution's capacity to rapidly recover, adapt and achieve sustainable development when confronted with sudden crises, policy shifts or resource constraints. It encompasses both institutional resilience and resource flexibility at the organizational level, as well as the psychological and behavioural adaptability of staff and students (Robinson and Pedersen, 2021). Its key dimensions encompass: (1) environmental resilience (the shock resistance of campus facilities, energy systems and waste management); (2) organizational resilience (the flexibility of governance structures, decision-making mechanisms and talent reserves); and (3) learning resilience (the innovative capabilities of staff and students, alongside mechanisms for knowledge sharing and accelerated learning) (Gao et al., 2024).

*Ability, Motivation, Opportunity (AMO) Theory*

The Ability, Motivation, Opportunity (AMO) Theory is a core model within the fields of human resource management and organizational behaviour, serving to explain and predict employee performance and overall organizational effectiveness. This model was first proposed by Appelbaum et al. (2000) and has since been widely cited and expanded upon.

The AMO Theory offers a framework for comprehending how various HR procedures can affect employee performance, with the formula "Performance = f (Ability × Motivation × Opportunity)": (1) Practices that improve ability: These consist of training and development initiatives as well as selective hiring; (2) Practices that increase motivation include job security, career development opportunities, and performance-based pay; (3) Practices that increase opportunities include information exchange, teamwork, job design, and employee involvement initiatives. Therefore, organizations can create complete HR systems that improve employee performance and contribute to overall organizational success by concentrating on these three areas.

The AMO theory is initially applied to explain how human resource practices enhance employee performance, before being widely adapted to the field of GHRM, where it has become the predominant framework for systematically classifying GHRM practices (Benevene and Buonomo, 2020; Pooja and Bhavani, 2025). In recent years, research has integrated AMO with topics such as supply chain resilience, organisational citizenship behaviour, and environmental cooperation, forming a tripartite research chain encompassing AMO, GHRM, and resilience (Gu et al., 2023; Yu et al., 2020).

**Hypothesis Development**

*Direct Relationships*

Multiple empirical studies have demonstrated a positive correlation between GHRM and PEB. For instance, green recruitment instils environmental motivations within organizations, enhancing employees' identification with green objectives (N. T. Hong et al., 2024); green training bolsters employees' environmental knowledge and green mindfulness, increasing behavioural willingness (Li and Li, 2025); green remuneration/rewards can enhance PEB through extrinsic incentives (Saifulina et al., 2020); green employee engagement strengthens organizational commitment and engagement, further promoting PEB (Prasad et al., 2025). Hence, Hypothesis H1 is formulated.

**H1:** GHRM has a positive impact on employee PEB.

As is confirmed by many researched, GHRM efficiently affect green human capital performance. Green recruitment and selection within GHRM can rapidly onboard employees possessing green knowledge, elevating the baseline level of an organization’s green human capital (Andini and Harsono, 2024). Moreover, green training and development enhance employees' green skills, enabling higher environmental outputs in practical work; green performance management encourages employees to translate green behaviours into quantifiable outcomes, boosting the performance contribution of green human capital; green remuneration and incentives strengthen environmental motivation, increasing both the frequency and quality of employees' voluntary participation in eco-friendly practices (Aggarwal et al., 2023). Finally, green employee engagement fosters a sense of ownership towards environmental stewardship, cultivating an internal green culture that further elevates the overall effectiveness of green human capital (Aggarwal et al., 2023). Hence, Hypothesis H2 is formulated.

**H2:** GHRM has a positive impact on green human capital performance.

GHRM has had a positive contribution on the green innovation of various organizations (Munawar et al., 2022). By fostering an environmentally conscious culture within organizations, the staff can be encouraged to consciously consider environmental factors in their daily work and innovative ideas among employees can be also stimulated (Jia et al., 2024). GHRM will enhance employees' commitment to green work engagement and fosters creativity, thereby translating into tangible green innovation behaviours (Aboramadan, 2022). Incorporating green principles systematically into human resources processes such as recruitment, training, and performance appraisal can enhance overall innovation capabilities. For instance: green recruitment and training equip staff with environmental knowledge and skills, forming “green intellectual capital” that provides raw material for innovation; rewarding or recognizing employees who propose green initiatives strengthens motivation for innovation and increases the frequency of green ideas generated (Malik et al., 2021). Hence, Hypothesis H3 is formulated.

**H3:** GHRM has a positive impact on green innovation.

As is indicated by numerous studies, employee PEB is thought to positively impact sustainable resilience, organizational resilience (Robinson and Pedersen, 2021), and psychological resilience (Wang et al., 2025) within HEIs. Pro-environmental behaviour significantly reduces resource wastage and enhances the resilience of campus systems such as student accommodation (Thondhlana and Hlatshwayo, 2018); innovative environmental governance

mechanisms like green procurement and sustainable campus policies facilitate organizational transitions towards greater sustainability and resilience (Robinson and Pedersen, 2021). Employee PEB, including systematic green initiatives (energy management, waste reduction), can bolster HEIs' resilience when facing sudden crises (such as natural disasters, public health incidents, and energy shortages). Hence, Hypothesis H4 is formulated.
**H4:** Employee PEB has a positive impact on HEIs resilience.

The positive impact of green human capital on organizational performance constitutes a pivotal factor in enhancing organizational sustainability. The performance of human capital simultaneously bolsters an organization's adaptability and resilience (Liu and Zhao, 2023). Green human capital performance in energy conservation, emissions reduction and waste management can lower the probability of sudden environmental incidents on campus, thereby enhancing environmental resilience (Zahrani, 2024). Faculty possessing green skills can conduct green research and foster interdisciplinary collaboration, creating a "dual-engine drive" of technological and managerial innovation, which is also crucial for universities to swiftly adjust their teaching and research directions when facing policy or technological shifts (Syahidun et al., 2024). Institutions demonstrating strong green human capital performance gain greater access to government green funds, corporate partnerships, and public trust. This fosters more robust funding and collaborative networks, enhancing resource mobilization flexibility during crises (Lastanti and Augustine, 2022). Moreover, a "green resilience culture" can be fostered in the permeating procedure of green values in campus culture with green incentives and administrative supports (Zhang, 2023).

Thus, green human capital performance can significantly enhance the resilience of HEIs, enabling them to maintain sustained and stable development when facing external shocks from policy, market, and natural sources. Hence, Hypothesis H5 is formulated.
**H5:** Green human capital performance has a positive impact on HEIs resilience.

Green technological innovation can effectively mitigate environmental risks in campus operations and enhance resilience (Li et al., 2024). The reserve of green technologies developed through industry-academia-research collaboration strengthens adaptability to policy and market shifts (Wu et al., 2024). Incentives such as green policies and financial rewards significantly boost HEIs' willingness to engage in green innovation, accelerating the transformation of innovations into resilience (Hong, 2024). When green innovation permeates curriculum design, research projects and community services, fostering a "green campus" ethos, it further elevates the institution's overall resilience (Sutawaidjaya et al., 2024). Hence, Hypothesis H6 is formulated.
**H6:** Green innovation has a positive impact on HEIs resilience.

*Mediating Role of Employee PEB, Green Human Capital Performance and Green Innovation*
Among three key dimensions (environmental resilience, organizational resilience and learning resilience) of HEIs resilience (Gao et al., 2024), numerous scholars have observed that GHRM indirectly enhances environmental resilience. For instance, green recruitment introduces staff with environmental awareness (Jumiati and Toaha, 2025); green training equips all employees with practical skills in energy conservation and waste sorting (Yaqub et al., 2024); while performance assessments incorporate resource utilization rates as key indicators, driving reductions in campus energy consumption (Jumiati and Toaha, 2025). Moreover,

GHRM can indirectly fortify organizational resilience. For instance, it fosters cross-departmental collaboration (such as joint green policy formulation by logistics, teaching, and research units), establishing a unified sustainable governance framework. Green incentives enhance staff identification with organizational objectives, reducing turnover and maintaining continuity of key personnel (Jumiati and Toaha, 2025). Finally, GHRM indirectly fosters learning resilience. Green training and innovation projects stimulate sustainable research and pedagogical innovation among staff and students; green performance evaluations encourage academics to integrate eco-innovation principles into curriculum design, establishing a chain of "green teaching" (Shokry et al., 2024).

Based on the description above, Hypotheses H7-H9 are formulated as follows:
**H7:** Employee PEB mediates the relationship between GHRM and HEIs resilience.
**H8:** Green human capital performance mediates the relationship between GHRM and HEIs resilience.
**H9:** Green innovation mediates the relationship between GHRM and HEIs resilience.

## Methods

*Conceptual Framework*

Based on the literature review, the conceptual framework of GHRM on HEIs Resilience mediated by PEB, Green Human Capital Performance and Green Innovation is as following. While PEB, green human capital performance and green innovation are mediators, GHRM is the independent variable and HEIs resilience is the dependent variable.

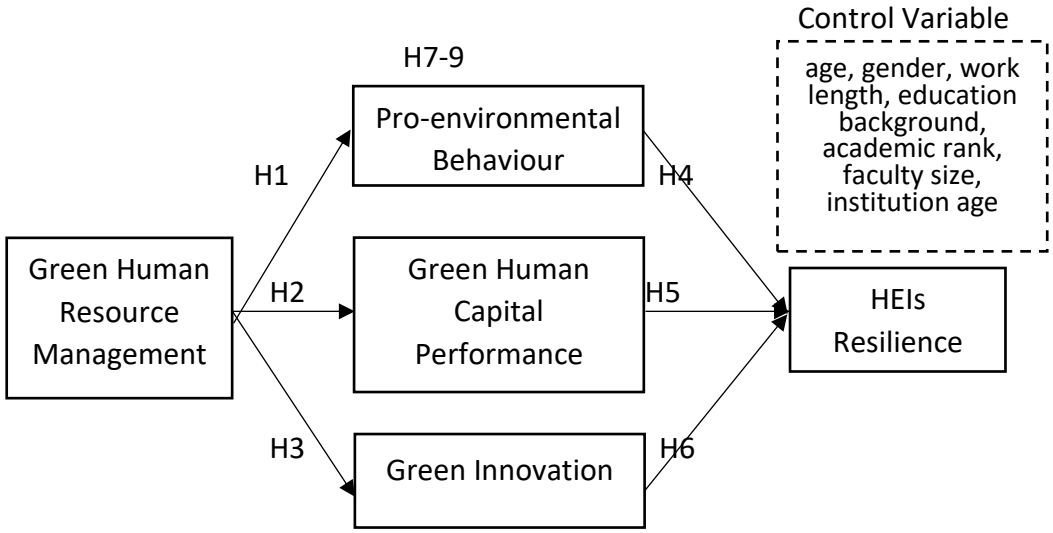


Figure 1. Conceptual Framework

According to AMO Theory, HEIs Resilience is the result of the interaction among three elements — Ability, Motivation and Opportunity. Green training, green recruitment, and green job descriptions can enhance employees' environmental knowledge and technical capabilities, thereby fostering PEB that corresponds to the "Ability". Green performance assessments, green incentives, and environmental values promotion can strengthen employees' environmental motivation, thereby yielding green human capital performance that corresponds to "Motivation". Green workflows, channels for environmental project

participation, and resource-sharing platforms provide institutional and resource safeguards for innovation, thereby yielding green innovation that corresponds to “Opportunity”.

*Research Design and Scales*

In this study, quantitative research method is used through questionnaires for collecting the primary data among faculty in the universities in Jiangxi Province. The reason of choosing Jiangxi among all 34 provincial-level administrative regions. As is designated as a national pilot zone for ecological civilization and a pioneer region for green development, Jiangxi had carried out numerous policies on green finance, green industries, and ecological conservation, providing robust institutional safeguards for HEIs to implement green human resource management. Located in central China, Jiangxi combines industrial and agricultural strengths with abundant natural ecological resources. This enables the study to highlight both the differences and commonalities among various types of HEIs during their green transitions, ensuring the research findings possess strong applicability for broader implementation.

Firstly, a self-designed questionnaire with 7 items on personal information was offered to analyse the demographic profile of respondents. The GHRM was measured by a 6-item scale, adapted from Dumont et al. (2017) ,with the subject of ‘my company’ changing to ‘my university’. For example, ‘my *company (university)* has set green goals for our employees’, making it more suitable for the distribution environment in HEIs. The PEB was measured by a 7-item scale adopted from Robertson and Baling (2013), which was used to measure employees' green behaviour in the workplace. Green human capital performance was measured by 5 items adapted from a scale developed by Chen (2008) and revised by Chen and Chang (2012), with the location where the situation described in the question occurs changing from ‘company’ to ‘university’. For example, ‘the productivity and contribution of employees concerning environmental protection in the *compan*y *(university)* is better than those of its major competitors’. Green innovation was measured with a 4-items scale adapted from Mankgele (2023). To better align the question descriptions with the HEIs context, the following modifications had been made to the items, with annotations provided in brackets: ‘our *organization (university)* uses less or non-polluting/toxic materials’, ‘our *organization (university)* improves environmentally friendly packaging for existing and new products’, ‘our *organization (university)* recovers end-of-life products and recycling’ and ‘our *organization (university)* uses eco-labelling’. Finally, HEIs resilience was measured with a 5-items scale adopted from Parker and Ameen (2018). All the scales are 5-point Likert scales, in which employees choose the degree of green human resource management they perceive and the values from 1 to 5 represent, in sequence: “Never/Strongly disagree”, “Rarely/Somewhat disagree”, “Sometimes/Neutral”, “Often/Somewhat agree” and “Very frequently/Strongly agree”.

A pre-test on the overall construction was also conducted for testing and revise the questionnaire by sending to experts from two aspects: academicians specialising in human resource management and staff with extensive experience in human resource work within HEIs. In this stage, the overall number of items is quite appropriate, though online questionnaire completion may be rather haphazard, with respondents potentially not taking it seriously. To address this issue and enhance respondents' engagement and diligence, the homepage features a questionnaire briefing explicitly informing participants that completing

the survey will get a monetary reward. Additionally, a minimum time limit has been imposed on the answering process to prevent respondents from selecting answers without reading.

*Research Data*

According to Hair Jr et al. (2019), five times the total number of observed variables is the anticipated minimum sample size. As there are 27 observed items in this study, a minimum number of 135 respondents was required. Moreover, based on the calculating result of G*Power 3.1.9.7 software, the total sample size should be 98. Finally, this study selected 135 employees in HEIs in Jiangxi, China as the minimum sample size. To facilitate the distribution, completion and collection of questionnaires, this study employed the on-line platform of WENJUANXING for the survey. Furthermore, to ensure the validity of responses, an invitation to complete the questionnaire and short instructions were included on the questionnaire's opening page. Among 349 collected answers, the number of not completed is 5 and identical answers 8, which were screened out. Thus, 336 surveys were deemed valid and used with the response rate reaching 96.2%).

Table 1
*Demographic Profile of Respondents*

| Characteristics | Category | Frequency | Percent (%) |
|---|---|---|---|
| Gender | male | 186 | 55.357 |
| | female | 150 | 44.643 |
| Age | under 30 | 45 | 13.393 |
| | 31-35 | 64 | 19.048 |
| | 36-45 | 87 | 25.893 |
| | 46-55 | 88 | 26.190 |
| | Over 56 | 52 | 15.476 |
| Work Length | Below 3 | 37 | 11.012 |
| | 4-10 | 74 | 22.024 |
| | 11-20 | 112 | 33.333 |
| | 21-30 | 65 | 19.345 |
| | Over 31 | 48 | 14.286 |
| Education Background | undergraduate or below | 2 | 0.595 |
| | master's | 32 | 9.524 |
| | PhD. or postdoctoral researcher | 302 | 89.881 |
| Academic Rank | Assistant | 11 | 3.274 |
| | Lecturer | 105 | 31.250 |
| | Associate professor | 111 | 33.036 |
| | professor | 109 | 32.440 |
| Faculty Size | Less then500 | 35 | 10.417 |
| | 500-1500 | 89 | 26.488 |
| | More than 1500 | 212 | 63.095 |
| University Age | Less than 20 years | 59 | 17.560 |
| | 20-50 years | 92 | 27.381 |
| | More than 50 years | 185 | 55.060 |

SPSS 27 and SmartPLS 4.0 are utilized to analyse the collecting data in this study. The used research techniques include: (1) examining common method variance (CMV) of data by Harman single-factor test; (2) examining indicator loadings and Cronbach's alpha of constructs to assess reliability; (3) examining average variance extracted (AVE) and heterotrait–monotrait ratio (HTMT) value of correlations to assess validity; (4) examining

variance inflation factor (VIF), coefficient of determination ($R^2$), effect size ($f^2$), and predictive relevance ($Q^2$) to assess collinearity and the model's explanatory and predictive power; (5) using bootstrapping to test the path coefficients of hypotheses in partial least squares structural equation modelling (PLS-SEM).

**Findings**

*Results of CMV*

In order to mitigate the potential impact of CMV on the accuracy of research findings, this study implemented procedural controls during questionnaire distribution by emphasizing principles such as anonymity and confidentiality. Besides, the first factor extracted variance, calculated by SPSS, is only 39.851%, meeting the criterion of less than 50% (Podsakoff, 2003). This result suggests that no significant CMV exists in this study, and the data analysis findings are not markedly affected by such variances.

*Results of Reliability and Validity Assessment*

This study employed SmartPLS 4.0 to analyse the data, examining the reliability and validity of the model to assess whether the questionnaire survey demonstrated consistency and dependability.

According to the results reflected in Table 2, all indicator loadings range from 0.758 to 0.880, meeting the criterion of more than 0.708 (J. F. J. Hair et al., 2021). Moreover, Cronbach's α for each latent variable ranged from 0.861 to 0.907, all exceeding the threshold value of 0.70 (Taber, 2018). These findings indicate that the model employed in this study possesses good reliability.

Meanwhile, as can be seen in Table 3 and Table 4, AVE values ranged from 0.615 to 0.706, all exceeding the threshold value of 0.5 (Hair et al., 2022); the HTMT values for each latent variable were below 0.9 suggested by Henseler et al. (2015). These findings indicate that the model employed in this study possesses satisfactory validity.

Table 2
*Reliability and Validity Assessment*

| Variables | Items | Loading | Cronbach's Alpha (α) | AVE |
|---|---|---|---|---|
| GHRM | GHRM1 | 0.817 | 0.907 | 0.682 |
| | GHRM2 | 0.814 | | |
| | GHRM3 | 0.844 | | |
| | GHRM4 | 0.833 | | |
| | GHRM5 | 0.790 | | |
| | GHRM6 | 0.856 | | |
| PEB | PEB1 | 0.834 | 0.896 | 0.615 |
| | PEB2 | 0.792 | | |
| | PEB3 | 0.765 | | |
| | PEB4 | 0.784 | | |
| | PEB5 | 0.776 | | |
| | PEB6 | 0.779 | | |
| | PEB7 | 0.758 | | |
| GHC | GHC1 | 0.790 | 0.878 | 0.673 |
| | GHC2 | 0.826 | | |

| | | | | |
|---|---|---|---|---|
| | GHC3 | 0.809 | | |
| | GHC4 | 0.845 | | |
| | GHC5 | 0.831 | | |
| | GI1 | 0.840 | | |
| GI | GI2 | 0.856 | 0.861 | 0.706 |
| | GI3 | 0.782 | | |
| | GI4 | 0.880 | | |
| | RS1 | 0.839 | | |
| | RS2 | 0.774 | | |
| RS | RS3 | 0.834 | 0.876 | 0.669 |
| | RS4 | 0.831 | | |
| | RS5 | 0.811 | | |

Note: GHRM= Green Human Resource Management, PEB = Pro-environmental Behaviour, GHC = Green Human Capital Performance, GI = Green Innovation, RS = HEIs Resilience

Table 3
*Heterotrait-Monotrait Ratio (HTMT) (N=336)*

| | GHC | GHRM | GI | PEB | RS |
|---|---|---|---|---|---|
| GHC | | | | | |
| GHRM | 0.653 | | | | |
| GI | 0.476 | 0.671 | | | |
| PEB | 0.488 | 0.646 | 0.512 | | |
| RS | 0.564 | 0.514 | 0.518 | 0.484 | |

*Results of Structural Model Assessment*

The following results are obtained using SmartPLS 4.0 software. The VIF values of the latent variables range from 1.000 to 1.383, meeting the ideal criterion of ≤ 3 proposed by Hair et al. (2019), that indicates no multicollinearity issues exist among the latent variables in this research model. Meanwhile, the VIF values of all observed variables range from 1.667 to 2.612, which are below 3 as well, indicating no collinearity problem will exist among observed variables in this model.

Besides, among all the endogenous variables, the $R^2$ for GHC is 0.342, GI 0.353, PEB 0.341, and RS 0.343. All these results exceed 0.33 but below 0.67. According to Chin (1998)'s proposed standard—"0.67 is considered substantial, 0.33 moderate, and 0.19 weak", all variables possess moderate explanatory power. In summary, it can be concluded that the research model presented demonstrates effective explanatory capability.

Additionally, the value of $f^2$ in this model, displayed in Table 4, consistently exceeds 0.02. According to Cohen (1988), this result indicates that independent variables demonstrate a high degree of explanatory power for dependent variable.

Table 4
*The Value of Effect Size ($f^2$)*

| | GHC | GI | PEB | RS |
|---|---|---|---|---|
| GHC | | | | 0.117 |
| GHRM | 0.519 | 0.546 | 0.517 | |
| GI | | | | 0.061 |
| PEB | | | | 0.038 |

Furthermore, the $Q^2$ values of PEB, GHC, GI and RS are 0.330, 0.332, 0.344 and 0.205 respectively. Based on the criteria of "greater than 0" proposed by (Hair et al., 2011), all the exogenous variables had some predictive power for the endogenous variables.

Table 5
*The Value of Model Fit*

| | Saturated model | Estimated model |
|---|---|---|
| SRMR | 0.044 | 0.053 |
| d_ULS | 0.723 | 1.058 |
| d_G | 0.291 | 0.294 |
| Chi-square | 575.048 | 570.538 |
| NFI | 0.895 | 0.895 |

Lastly, the model fit indices are as follows: SRMR (Saturated model) = 0.044, NFI = 0.895 (Saturated model), both of which belong to the acceptable range.

*Results of Hypotheses Testing*

Bootstrapping method is used to test the path coefficients of hypotheses, with the partial least squares structural equation model displayed in Figure 2. The hypotheses testing results of the model are presented in Table 5.

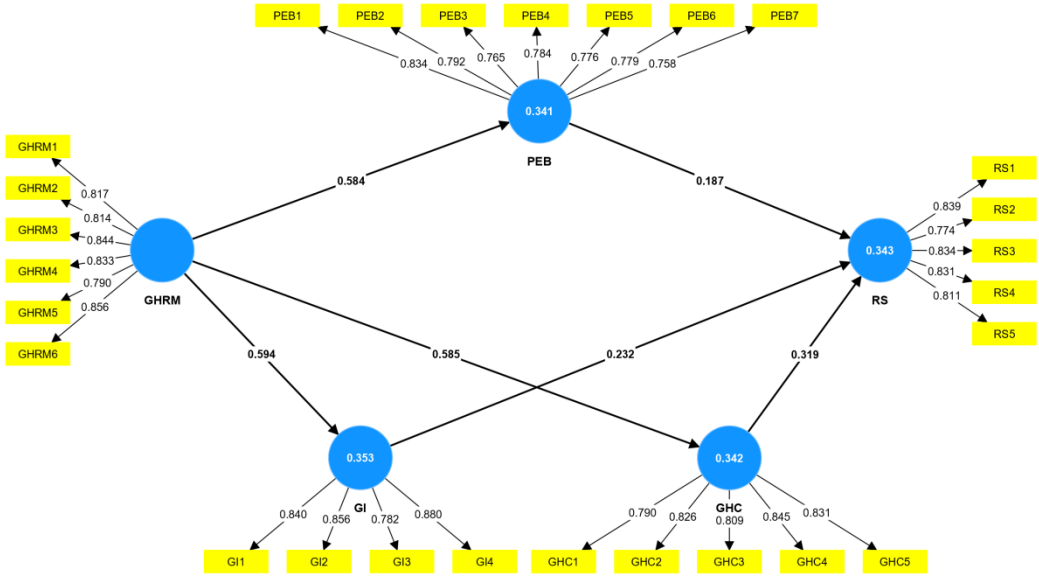


Figure 2. Structural Model

Regarding the path coefficients of direct relations:

H1: The path coefficient from GHRM to PEB is 0.584 ($t$=11.794, $p$=0.0, with a confidence interval (CI) [0.483, 0.677] not containing 0), indicating that GHRM has a significant positive influence on PEB.

H2: The path coefficient from GHRM to GHC is 0.585 ($t$=9.716, $p$=0.0, with a CI [0.465, 0.7] not containing 0), indicating that GHRM has a significant positive influence on GHC.

H3: The path coefficient from GHRM to GI is 0.594 ($t$=11.871, $p$=0.0, with a CI [0.493, 0.69] not containing 0), indicating that GHRM has a significant positive influence on GI.

H4: The path coefficient from PEB to RS was 0.187 ($t$=2.536, $p$=0.011, with a CI [0.047, 0.334] not containing 0), indicating that PEB has a significant positive influence on RS.

H5: The path coefficient from GHC to RS is 0.319 ($t$=3.859, $p$=0.0, with a CI [0.156, 0.483] not containing 0), indicating that GHC has a significant positive influence on RS.

H6: The path coefficient from GI to RS was 0.232 ($t$=2.909, $p$=0.004, with a CI [0.079, 0.393] not containing 0), indicating that GI has a significant positive influence on RS.

Table 6
*Path Coefficients*

| Hypothesis | Path | Path Coefficient ($\beta$) | $t$-value | $p$-value | 95% CI | |
|---|---|---|---|---|---|---|
| H1 | GHRM→PEB | 0.584 | 11.794 | 0.000 | 0.483 | 0.677 |
| H2 | GHRM→GHC | 0.585 | 9.716 | 0.000 | 0.465 | 0.700 |
| H3 | GHRM→GI | 0.594 | 11.871 | 0.000 | 0.493 | 0.690 |
| H4 | PEB→RS | 0.187 | 2.536 | 0.011 | 0.047 | 0.334 |
| H5 | GHC→RS | 0.319 | 3.859 | 0.000 | 0.156 | 0.483 |
| H6 | GI→RS | 0.232 | 2.909 | 0.004 | 0.079 | 0.393 |
| H7 | GHRM→PEB→RS | 0.109 | 2.514 | 0.012 | 0.027 | 0.195 |
| H8 | GHRM→GHC→RS | 0.187 | 3.522 | 0.000 | 0.090 | 0.297 |
| H9 | GHRM→GI→RS | 0.138 | 2.886 | 0.004 | 0.045 | 0.235 |

Regarding the path coefficients of mediating relations:

For the path 'GHRM→PEB→RS', the mediation effect value was 0.109 ($t$=2.514, $p$=0.012, with a confidence interval [0.027,0.195] not containing zero). For the path 'GHRM→GHC→RS', the mediation effect value is 0.187 ($t$=3.522, $p$=0.0, and the confidence interval [0.09, 0.297] does not contain zero). For the path 'GHRM→GI→RS', the mediation effect value was 0.138 ($t$=2.886, $p$=0.004, with a confidence interval [0.045, 0.235] not containing zero). All these results indicate that PEB, GHC and GI significantly mediates the effect of GHRM on RS.

**Discussion and Conclusion**

This study explores the influence of GHRM on HEIs resilience with mediators of pro-environmental behaviour, green human capital performance and green innovation. Based on the results calculated, GHRM has a positive effect on HEIs resilience, mediated by pro-environmental behaviour, green human capital performance and green innovation. This finding is consistent with existing researches. For example, PEB is influenced by external factors such as campus facilities and policies, and exerts a positive effect on organizational sustainability (Thondhlana and Hlatshwayo, 2018); GHRM practices such as green training, green recruitment and green incentives significantly can improve green human capital performance by enhancing energy efficiency and waste recovery rates, thereby strengthening the environmental resilience of HEIs (Zahrani, 2024); GHRM influences product and process innovation, thereby indirectly enhancing environmental performance within organizational resilience (Qiu et al., 2025). Through the empirical application of AMO theory, a comprehensive new perspective for promoting the resilience for seeking for sustainable development in HEIs is offered in this study.

In order to improve GHRM in HEIs, an integrated six-module closed-loop system of "Human Resources — Process Management — Education — Rewards — Cross-departmental Collaboration — Faculty Engagement" should be formed, with GHRM occupying the central position:

1. Optimizing GHRM at the institutional level: Incorporate dedicated contents or requirements on GHRM within the regulations or policies on personnel management in HEIs,

specifying operational guidelines for green recruitment, green selection, green training, green performance management, green incentives, etc.; include GHRM objectives in the annual priorities of HEIs leadership to ensure adequate budget and resource allocation; establish a "Green Post" designation and implement a digital paperless application system.
2. Fostering green consensus by strengthen education and training: Launch an online "Green Campus Management" course, inviting environmental experts and corporate GHRM practitioners to deliver case studies, establishing a regular learning platform.
3. Refining incentive mechanisms: Establish certain green innovation fund to provide financial support for staff proposing viable environmental projects; implement a "Green Star" recognition scheme to foster a sense of honour.
4. Fostering cross-departmental collaboration: Establish a green campus management platform in partnership with logistics, infrastructure and research departments to achieve resource sharing, information exchange, and create a unified campus-wide green action network.
5. Establishing a green metrics framework: Embed green checkpoints within recruitment, training, and performance management processes; adopt the AMO framework to translate green competencies, motivation, and opportunities into quantifiable indicators, integrating these into annual performance appraisals.

In conclusion, as a pivotal lever for achieving sustainable development, GHRM do help in improving HEIs resilience when facing risk issues through pro-environmental behaviour, green human capital performance and green innovation. Although bottlenecks such as green recruitment, management support, and performance evaluation still persist, HEIs should advance simultaneously across multiple dimensions of institutional frameworks, performance metrics, training program, incentive structures, and governance mechanisms to establish a GHRM ecosystem, which is institutionalized, routine-based, and involves all members of the organization.

**Theoretical Implications**

This study enriches the research content of GHRM. As an emerging management concept, the related research of GHRM in China is still in the initial stage compared with that of foreign countries. This study further enriches the research content by combing the relevant literature, selecting faculty members at different levels as the survey object, and exploring the mechanism of the impact of GHRM on HEIs resilience in the context of China.

Meanwhile, this study further explains the factors that will have an impact on HEIs resilience. The implementation of any policy or practice in an organization cannot be separated from the faculty members, whose green behaviours play an important role in promoting the successful implementation of GHRM practices. Using resilience as an outcome variable and introducing relational psychological contract and environmental knowledge as mediating variables, this study explores the role of good relationship between faculty and organization in this process and enriches the research framework of resilience.

Moreover, this study enriches the research framework of AMO theory. The findings reveal that the AMO model has good explanatory power in analysing the factors influencing HEIs resilience as well.

**Practical and Social Implications**

Firstly, as previous studies on HEIs resilience focus more on campus design, environmental behaviour, this study explores the mechanism of GHRM's influence on HEIs resilience. It is thought to make a contribute on enhancing environmental performance and operational efficiency on campus, and strengthening HEIs' adaptability and resilience within complex and dynamic environments.

Besides, through the research on the mediating role of pro-environmental behaviour, green human capital performance and green innovation, data support and case studies for university management to formulate specific green staffing policies can be provided, thereby avoiding the waste of resources or implementation resistance that may result from ill-considered rollouts.

Furthermore, as cross-disciplinary research on the interplay between GHRM and HEIs resilience remains scarce, particularly lack of empirical evidence demonstrating how green culture enhances HEIs' crisis adaptability. This study fills a gap in the field.

**Limitations and Suggestions for Future Research**

This study has certain limitations. To be specific, firstly, random sampling may result in findings lacking generalizability; secondly, as the questionnaire was collected online, respondents' answers may not be entirely accurate; thirdly, the dimensions of GHRM were not sufficiently refined, rendering the scope of the research insufficiently targeted.

In the future, researches can be made from following aspects: (1) cross-national comparative study: examine variations in the impact of GHRM on HEI resilience across different institutional environments (e.g., EU, Asia, Latin America), testing the moderating effects of institutional frameworks and regulatory pressures; (2) integration of digital and green HR: explore the application of AI HR and green performance analytics platforms in university crisis management, evaluating their contribution to recovery velocity and resource conservation; (3) longitudinal case tracking: select HEIs during emergencies such as pandemics or natural disasters to track the implementation process and resilience performance of GHRM-related policies, providing empirical evidence of causal chains.

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