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Talha Kawan Salim
College of Administration and
Economics, Tikrit University,
Tikrit, Iraq

The role of sustainable human resource management in enhancing organizational innovation: A field study in the Iraqi industrial sector

Talha Kawan Salim

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Abstract

The present study aims to examine the relationship between sustainable human resource management and organizational innovation through a field study in the Iraqi industrial sector. To achieve this objective, it was necessary to address the research problem, which lies in the weak implementation of sustainability in human resource management, negatively impacting organizational innovation in the studied sector. Addressing this issue required conducting field visits to various Iraqi industrial sectors to identify the strengths and weaknesses related to the study's subject. Accordingly, a questionnaire was designed using a five-point Likert scale and distributed to a sample of 354 employees across different sectors. After data collection, statistical analysis was performed using SPSS and AMOS software. The results indicated a significant impact of sustainable human resource management in all its dimensions on organizational innovation in the Iraqi industrial sector. Based on these findings, several recommendations were proposed, the most important of which are: improving the sustainability of human resources and linking it to innovation indicators to enhance employee motivation, as well as expanding the adoption of modern technology as a key driver of organizational innovation.

Keywords: Sustainable human resources, organizational innovation, Iraqi industrial sector.

Introduction

The approach to sustainable human resource management (SHRM) has evolved over the past 15 years as a framework for managing people to achieve positive financial, social, human, and environmental outcomes in both the short and long term. Sustainability has become a central concept in human resource management (Kramar, 2022) ^[16]. Sustainable HRM practices enable organizations to meet the financial, social, and environmental objectives of both internal and external stakeholders. Moreover, these practices can mitigate unintended consequences and negative reactions while striving to achieve results that align with stakeholder expectations. Organizations will experience divergent degrees of importance when it comes to these outcomes.

SHRM generates multiple benefits including job security together with health enhancement and organizational resilience as well as participatory leadership and sustainable competitive advantage and value-added economy and self-responsibility and work-life balance. Innovation models need SHRM to function while an appropriate organizational culture develops through SHRM that advances organizational success (Nour Al-Huda, 2023) ^[5].

The broad understanding of organizational innovation centers on "how managers do what they do" while this concept bears the name of managerial innovation instead of technological innovation. Innovations that contribute to recruiting staff while managing resources for task organization and authority systems and compensation methods are part of this approach. Changes in organizational structures combined with modifications of people's beliefs and behaviors and the establishment of new rules and procedures define organizational innovation (Fernandes et al., 2018) ^[18].

Sustainable human resource management (SHRM) presents itself as a vital process which enables organizational innovation development. A sustainable HRM strategy creates a workplace that supports the development of skills and innovative thinking through workforce planning combined with sustainable recruitment and training alongside performance evaluation and employee motivation systems.

Corresponding Author:
Talha Kawan Salim
College of Administration and
Economics, Tikrit University,
Tikrit, Iraq

Implementing these practices leads organizations to improve their innovative capabilities. The organizational emphasis on sustainability drives employees to find creative solutions which lead to long-term successes. The application of SHRM leads to organizational performance enhancement and strengthened competitiveness (Wagner & Weeger, 2021)^[15].

The existing research has failed to fully tackle the research question. Companies in the Iraqi industrial sector struggle with weak implementation of sustainability requirements across various domains, particularly in human resource management. The lack of sufficient sustainability efforts among these companies drives them to find proper solutions because they fall behind in their sustainability initiatives. Organizational innovation has proven to be a crucial solution because it provides managerial services and technological capabilities which meet sustainable development requirements for human resources and other aspects.

To achieve the best statistical solution, this study raises the following research question

What are the contributions of sustainable human resource management for achieving organizational innovation in the Iraqi industrial sector?

The research investigates Sustainable Human Resource Management practices in Iraqi industrial organizations to understand their impact on organizational innovation. The research examines how sustainable human resource management practices influence managerial and service-focused and technological innovation development within these organizations. The final objective focuses on improving the sector's capacity to fulfill sustainable development expectations while managing their existing difficulties. The study evaluates this goal from theoretical elements in addition to practical research methods.

Previous Studies and Hypothesis Development

The study by Alipour et al. (2022)^[14], the paper "Sustainable, Agile, and Green Human Resource Management: Its Impact on Organizational Innovation and Performance" established the concept of LARG HRM while studying how these elements affect innovation and performance outcomes of organizations. Data collection occurred through administered questionnaires which served to survey 102 service sector organizations in Iran. The researchers processed their findings using Partial Least Squares Structural Equation Modeling (PLS-SEM). Research findings demonstrate that LARG HRM produces positive effects on organizational innovation. Organizational innovation serves as a pathway that LARG HRM establishes to affect organizational performance.

The study by Susantinah & Krishernawan (2023)^[17], the study "Human Resource Management Strategy in Enhancing Organizational Innovation" evaluated methods HRM utilizes to advance organization innovation. Research conducted a qualitative analysis through comprehensive literature review spanning 2014 to 2023 to gain in-depth knowledge about this subject. The research results confirm that organizations must successfully unite human resources

management to enable employee power and build organizational cultures promoting innovative practices.

The study by Alfaware & Atan (2021)^[12] A research analyzed the impact of organizational innovation (OI), knowledge management (KM), and strategic human resource management (SHRM) on sustainable competitive advantages (SCAs) in Jordanian universities through empirical methods. The research team distributed their specially created questionnaire to 400 workers. The research established that Organizational Innovation functions as a partial mediator that significantly links knowledge management, strategic human resource management, and sustainable competitive advantages in universities.

The study by Wagner & Weeger (2021)^[15], this study examined the bond between Sustainable Human Resource Management (SHRM) and Organizational Innovation through the research entitled "The Relationship between Sustainable Human Resource Management (SHRM) and Organizational Innovation". The research examined how SHRM practices that include planning along with recruitment and development followed by performance management and rewards platforms affect organizational innovation. SHRM practices develop a workplace culture which encourages innovation while motivating workers to conduct creative activities and this results in better organizational performance alongside sustainability improvements.

Study Hypotheses

The research hypotheses have been derived from the findings of previous studies:

Research Hypotheses

Based on the reviewed literature, the study formulates the following hypotheses

- H1: Sustainable human resource management has a statistically significant impact on organizational innovation.
- A statistically significant impact of sustainable planning on organizational innovation is confirmed by H2.
- H3: Sustainable recruitment has a statistically significant effect on organizational innovation.
- H4: Sustainable training has statistically significant effects on organizational innovation.
- Finally, the H5 there is a statistically significant impact of sustainable performance evaluation on organizational innovation.
- H6: Sustainable compensation has a statistically significant impact on organizational innovation.

Research Gap: The table (1) presents the comparison of the previous studies of the SHRM and organizational innovation and classifies the research gaps, which are not contained in each study. Furthermore the table depicts how the current study intends to fill these gaps by presenting a thorough model that considers the relationship between SHRM and organizational innovation by putting to focus environmental sustainability and the part of sustainable human resources as innovation sponsor and company productivity.

Table 1: Research Gap - Previous Studies vs. Current Study

Study	Main Topic	Research Gap	Contributions of the Current Study
Alipour, et. al, 2022 [14]	The Impact of LARG HRM on Organizational Innovation and Performance	The lack of consideration for sustainable human resources and the focus on environmental dimensions in agile and lean HRM models.	A comprehensive study of sustainable human resource management and organizational innovation.
Susantinah & Krishnawan, 2023 [17]	HRM Strategies and Fostering Organizational Innovation	The absence of focus on environmental sustainability in fostering organizational innovation.	An in-depth analysis of how HR sustainability can be integrated to enhance organizational innovation.
Alfawaire & Atan, 2021 [12]	The Impact of Organizational Innovation and Knowledge Management on SCA	The lack of connection between organizational innovation and sustainable human resource management.	Focusing on the role of sustainable HR in achieving organizational innovation, with measurement of both direct and indirect effects.
Wagner & Weeger, 2021 [15]	SHRM and Its Impact on Organizational Innovation	The focus on sustainable HRM practices without addressing the environmental impact.	Presenting an integrative model that links sustainable HR with organizational innovation.

Theoretical Framework

Firstly: Sustainable Human Resource Management (SHRM): the sustainable human resource strategies and policies are to encourage responsible and sustainable work processes, like sustainable recruitment, training and development, and addressing work environments to guarantee the welfare of staff and decreasing the environmental impact of the organization. Further, these strategies lead to an embellishment of the organization's reputation and attracting talent in addition to backing the organization as a whole and society overall sustainability (Khari, 2022, p. 85) [7]. The practices associated with Sustainable Human Resource Management are as below:

1. Sustainable Planning: According to (Abbas, 2021, p. 110) [6], it is the process of obtaining the right number of qualified individuals for appropriate positions, either within the organization or externally, aligned with the available positions the organization expects to have over a specific time period.
2. Sustainable Recruitment: (Al-Hariri et al., 2023, p. 604) [5] emphasizes the importance of recruiting employees with appropriate skills and experience who are concerned with environmental and social issues, and whose qualifications align with recruitment standards related to the specific duties of the job, aiming to build a workforce oriented towards sustainability.
3. Sustainable Training and Development: (Kang et al., 2022, p. 3) [10] points out that allowing employees to acquire relevant knowledge, skills, and attitudes related to sustainability before performing specific jobs is essential for enhancing environmental awareness and enthusiasm to engage in environmental protection practices through sustainable training. This is further emphasized by (Manzoor et al., 2019, p. 6) [13].
4. Sustainable Performance Evaluation: (Malik et al., 2020, p. 4) [11] defines it as a formal process where the organization's management monitors the performance and efficiency of employees sustainably and takes necessary actions to enhance their productivity to maximize the benefits of each employee's capabilities, attitudes, and skills.
5. Sustainable Compensation and Reward: (Kang & Lee, 2021, p. 3) [9] defines the sustainable compensation and reward system as a process that motivates employees through performance-based incentives, such as promotions, financial and non-financial rewards, and creativity incentives, to encourage high levels of sustainability in employee performance. These are benefits provided by the organization to employees in

exchange for completing their various tasks, including salaries, wages, allowances, and others, which the organization ensures. Employees are also supported through child care, scholarships, life insurance, retirement plans, and medical services. The compensation is equitable, transparent, fair, and free from discrimination based on gender or race.

Second: Organizational Innovation: Organizational innovation can be defined as a set of practices or procedures aimed at the effective application of innovative ideas in management areas, and everything related to enhancing relationships between individuals who interact with one another to achieve organizational goals. In other words, organizational innovation represents a new, unconventional approach to work or a distinctive system that differs from traditional methods, aiming to achieve higher performance within the pursuit of applying quality standards and administrative excellence (Sadiq, 2021) [1]. Organizational innovation relies on several dimensions, which include:

1. Managerial Innovation: Focuses on interactive relationships aimed at accomplishing tasks and achieving work objectives, alongside the rules and procedures that contribute to enhancing communication and exchange between employees and the environment surrounding the organization (Abu Khousa, 2016).
2. Technological Innovation: Defined as the introduction of new ideas, methods, and tools, often in the form of new technologies. This type includes everything related to the product, whether it is goods or services, with an emphasis on the technical aspects that contribute to improving production processes using advanced technology, aiming to deliver superior quality products (Ince et al., 2016).
3. Service Innovation: Involves offering a new service or making significant improvements to the service concept in terms of practice and application. Service innovation aims to develop or improve services in ways that contribute to enhancing efficiency, effectiveness, and competitive advantage, thereby adding real value to the organization (Nasir, 2011). This type of innovation is also considered one of the main factors that influence the success of organizations in achieving their goals and minimizing risks (Sadiq, 2021) [1].

Field Aspect: First: Study Procedures

1. Study Methodology: The study adopted a descriptive analytical approach to highlight the role of sustainable human resource management in enhancing organizational innovation.

2. **Study Population and Sample:** The study included five different projects within the Iraqi industrial sector (oil sector, education sector, telecommunications sector, transportation sector, health sector). The sample consisted of 360 individuals working in these companies. The sample was purposive and included the following positions: general manager, department head, division manager, unit manager, senior expert, engineer, and administrators with university degrees.
3. **Data Collection Tool:** A questionnaire was designed using the five-point Likert scale (1 strongly disagree... 5 strongly agree) to collect data from the companies. A total of 360 questionnaires were distributed to the

sample of workers in the Iraqi industrial sector. A total of 354 questionnaires were returned, all valid for analysis, with a response rate of 98%. Table 2 shows the main and sub-components of the questionnaire along with Cronbach's alpha for each dimension.

4. **Data Analysis Tools:** After distributing the questionnaires, collecting the data, and filtering it, the data were analyzed using the SPSS and Amos software programs to identify the results of the study's three variables (sustainable human resource management, organizational innovation), as well as to test the hypotheses. Based on these results, the study reached several conclusions and recommendations.

Table 2: Components of the Questionnaire and Cronbach's Alpha Coefficients

Main Variables	Sub-dimensions	Number of Items	Cronbach's Alpha
Sustainable Human Resource Management	Sustainable Planning	5	0.79
	Sustainable Recruitment	5	0.77
	Sustainable Training	5	0.86
	Sustainable Performance Evaluation	5	0.95
	Sustainable Compensation	5	0.98
Organizational Innovation	Managerial Innovation	5	0.85
	Technological Innovation	5	0.83
	Service Innovation	5	0.87

Second: Study Results: Analysis of Sustainable Human Resource Management Results: The results shown in Table (3) refer to the responses of the individuals in the sample from the Iraqi industrial sector regarding sustainable human resource management. The individuals agreed by (72%) on the total dimensions of sustainable human resource management, which is an acceptable percentage, indicated by the arithmetic mean value of (3.526), and also by the response rate of (70.5%). The best dimension was the sustainable compensation dimension, which achieved

(83%), indicating that individuals consider sustainable compensation as an important factor. This reflects the significance of compensation in implementing sustainable human resource management requirements, which, in turn, enables the organization to serve the goals of sustainable development in general. The gap percentage was (29.5%), which is within moderate limits as the standard deviation is less than 1, suggesting homogeneity in the sample's opinions and the absence of significant variance in views on sustainable human resource management.

Table 3: illustrates the overall index of the sample's responses on the dimensions of sustainable human resource management.

Response Scale for Sustainable Human Resource Management Results					
	Percentage	Mean	Standard Deviation	Response Rate	Gap Percentage
Sustainable Planning	0.64	3.092	0.988	0.6184	0.3816
Sustainable Recruitment	0.63	3.083	1.013	0.6166	0.3834
Sustainable Training	0.71	3.583	0.987	0.7166	0.2834
Sustainable Performance Evaluation	0.79	3.875	0.898	0.775	0.225
Sustainable Compensation	0.83	3.997	0.891	0.7994	0.2006
Average	0.72	3.526	0.9554	0.7052	0.2948

Analysis of Organizational Innovation Results

The results in Table 4 show the responses of individuals working in the Iraqi industrial sector regarding the dimensions of organizational innovation. The responses leaned towards the agreement scale with a percentage of (79%), which is a high percentage, as indicated by the mean value (3.82), as well as the response rate of (76.4%). The dimension that achieved the highest agreement percentage

was "technological innovation," with a score of (82%). This highlights that technology is considered the most important and influential factor in organizational innovation for the sample. The gap percentage was (23.6%), which is low because the standard deviation is less than 1, indicating homogeneity in the sample's opinions and no significant variation in perspectives on the dimensions of organizational innovation.

Table 4: shows the overall indicator of the responses of the study sample individuals regarding the dimensions of organizational innovation.

Dimension	Percentage	Arithmetic Mean	Standard Deviation
Administrative Innovation	0.76	3.588	0.989
Technological Innovation	0.82	4.011	0.8762
Service Innovation	0.79	3.861	0.8994
Average	0.79	3.82	0.921533

Hypothesis Testing: Figure 1 illustrates the relationship of influence between the study variables, showing that sustainable human resource management affects

organizational innovation. The results depicted in the figure will pave the way for testing the hypotheses of the study, as outlined in the following paragraphs:

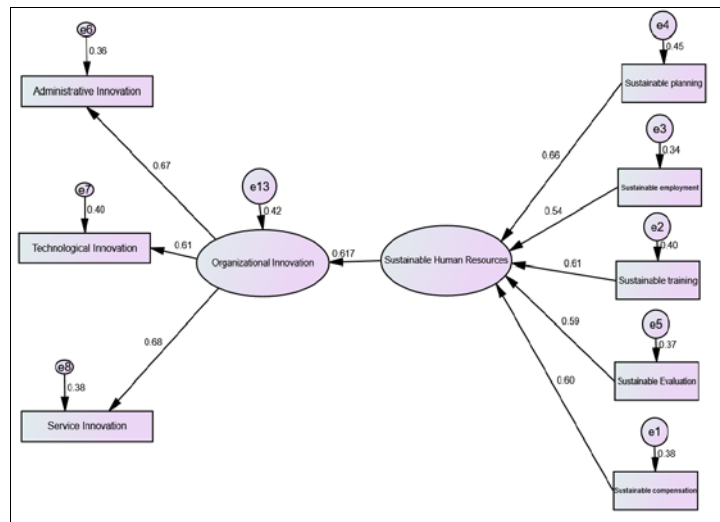


Fig 1: Structural Equation Model for Testing the Relationships between Sustainable Human Resource Management and Organizational Innovation

Testing Hypothesis (H1): The Relationship between Sustainable Human Resource Management and Organizational Innovation: The results in Table (5) show that the estimated value is 0.62, indicating that sustainable human resource management has a significant positive effect on organizational innovation. The standard error is 0.076, indicating the stability of the results, while the

critical value is 14.156, which strengthens the statistical significance of the relationship. The significance level is 0.000, indicating a high level of statistical significance. The variance explained is 0.42, meaning that sustainable human resource management explains approximately 42% of the variation in organizational innovation. Therefore, the first hypothesis will be accepted.

Table 5: The Relationship between Sustainable Human Resource Management and Organizational Innovation

Relationship	Estimate	S.E. (Standard Error)	C.R. (Critical Ratio)
Sustainable Human Resources → Organizational Innovation	0.62	0.076	14.156

Figure 2: The Impact Relationship of the Dimensions of Sustainable Human Resource Management (Planning, Recruitment, Training, Performance Evaluation, and Compensation) on Organizational Innovation

The results illustrated in the figure will guide us in testing the study's hypotheses, as outlined in the following paragraphs and presented in Table (6).

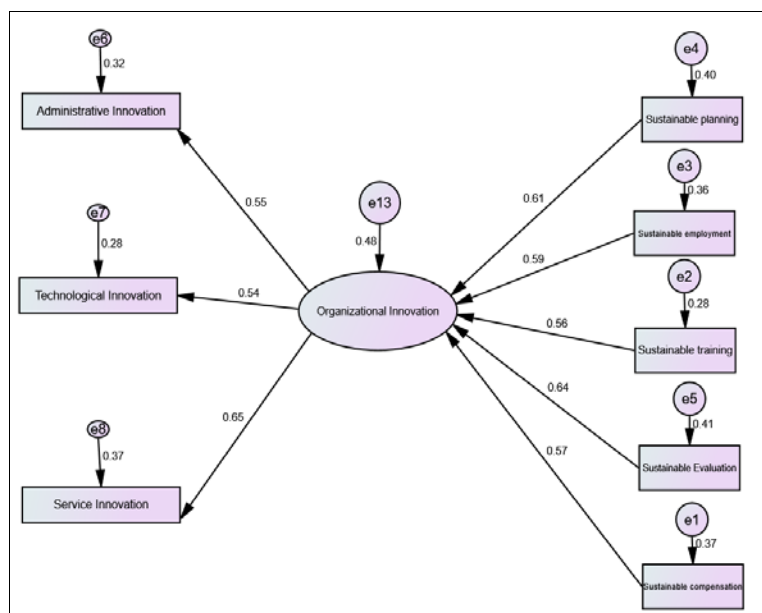


Fig 2: Structural Equation Model for Testing the Relationships between the Dimensions of Sustainable Human Resource Management and Organizational Innovation

Hypothesis Testing (H2): The Relationship between Sustainable Planning and Organizational Innovation: The results in Table (6) show an estimation value of 0.61, indicating that sustainable planning has a significantly positive effect on organizational innovation. The standard error is 0.065, indicating stable results. The critical value is 15.340, reinforcing the strong statistical significance of the relationship. The significance level is 0.000, indicating a high level of significance. The variance ratio is 0.40, meaning that sustainable planning explains about 40% of the variation in organizational innovation. Therefore, Hypothesis 2 will be accepted.

Hypothesis Testing (H3): The Relationship between Sustainable Recruitment and Organizational Innovation: The estimation value was 0.59, indicating a strong effect of sustainable recruitment on organizational innovation. The standard error was 0.068, suggesting stable results. The critical value was 16.700, and P = 0.000, reinforcing the strong statistical significance of the relationship. The variance ratio was 0.36, meaning that sustainable recruitment explains about 36% of the variation in organizational innovation. Based on this result, Hypothesis 3 will be accepted.

Hypothesis Testing (H4): The Relationship between Sustainable Training and Organizational Innovation: The estimation value was 0.56, indicating a moderate positive effect of sustainable training on organizational innovation. The standard error was 0.069, within a moderate range,

suggesting stability of this value. The critical value was 17.787, a high value, indicating strong statistical significance of the relationship. The significance level was P = 0.000, indicating that the relationship is significant at the 99% confidence level or higher. The variance ratio was 0.33, meaning that sustainable training explains about 33% of the variation in organizational innovation. Based on this, Hypothesis 4 will be accepted.

Hypothesis Testing (H5): The Relationship between Sustainable Performance Evaluation and Organizational Innovation: The estimation value was 0.64, indicating a strong effect of sustainable performance evaluation on organizational innovation. The standard error was 0.062, and the critical value was 13.641, with P = 0.000, indicating high statistical significance. The variance ratio was 0.41, meaning that sustainable performance evaluation explains about 41% of the variation in organizational innovation. Therefore, Hypothesis 5 will be accepted.

Hypothesis Testing (H6): The Relationship between Sustainable Compensation and Organizational Innovation: The estimation value was 0.57, indicating that sustainable compensation affects organizational innovation. The standard error was 0.069, and the critical value was 14.978, with P = 0.000, indicating high statistical significance. The variance ratio was 0.37, meaning that sustainable compensation explains about 37% of the variation in organizational innovation. Based on this, Hypothesis 6 will be accepted.

Table 6: Regression Analysis Results (Relationships between Variables)

Relationship			Estimate	S.E.	C.R.	P	Variance
Sustainable Planning	→	Organizational Innovation	0.61	0.065	15.340	0.000	0.40
Sustainable Recruitment	→	Organizational Innovation	0.59	0.068	16.700	0.000	0.36
Sustainable Training	→	Organizational Innovation	0.56	0.069	17.787	0.000	0.33
Sustainable Performance Evaluation	→	Organizational Innovation	0.64	0.062	13.641	0.000	0.41
Sustainable Compensation	→	Organizational Innovation	0.57	0.069	14.978	0.000	0.37

Discussion of Results

The choice of the descriptive analytical approach is highly appropriate for the nature of this study, which seeks to understand the relationship between sustainable human resource management and organizational innovation. This approach allowed for the collection and analysis of data to obtain accurate results. The diversity of the study sample, drawn from multiple sectors (oil, education, telecommunications, transportation, and health), enhances the comprehensiveness of the results, making them generalizable to the Iraqi industrial sector. Furthermore, the large sample size (360 individuals) with a response rate of 98% reflects the reliability of the results, especially since the sample included different job levels, which provides a balanced perspective.

Regarding the data collection tool, a questionnaire based on the five-point Likert scale was used, which helped in accurately measuring the opinions of the sample. The high Cronbach's alpha coefficients for all dimensions (ranging

from 0.77 to 0.98) confirm the reliability of the tool. The use of SPSS and Amos software for data analysis further enhances statistical accuracy and the ability to test relationships between variables in an advanced manner.

The results showed that sustainable human resource management received an overall agreement rate of 72%, with a mean value of 3.526. The best dimension was "sustainable compensation," which achieved 83%, highlighting the importance of incentives and compensation as a key tool for motivating employees and enhancing performance sustainability. The overall gap ratio of 29.5% is within moderate limits, indicating that most employees have similar attitudes towards the dimensions of sustainable human resource management.

Organizational innovation received an agreement rate of 79%, with a mean value of 3.82, indicating that the Iraqi industrial sector places significant importance on innovation as a means of development. "Technological innovation" achieved the highest agreement rate (82%), suggesting that

technology is considered the primary driver of innovation in the industrial sector. The gap ratio was low (23.6%), reflecting the alignment of workers' perspectives on innovation, indicating a clear understanding of its dimensions.

The results also indicated a clear positive effect of sustainable human resource management on organizational innovation, with an estimated value of 0.62 for the overall relationship between the two variables and strong statistical significance ($P = 0.000$). Furthermore, the analysis of the sub-dimensions of sustainable human resource management showed that all had an impact on organizational innovation, leading to the acceptance of all hypotheses. This implies that the general trend of the results suggests that sustainable human resource practices are not only a tool for achieving sustainability but also a means to enhance organizational innovation.

Based on the discussion of the results, the following recommendations are proposed: strengthening sustainable compensation strategies and directly linking them to innovation goals; focusing on enhancing sustainable planning and recruitment as a foundation for long-term innovation; developing advanced training programs focusing on technology and innovation; improving performance evaluation systems and linking them to innovation indicators to enhance employee motivation; and expanding the adoption of modern technology as a key driver of organizational innovation.

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