“Human capital and sustainable university: Mediating role of sustainable human resource management in Indonesia”

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HUMAN CAPITAL AND SUSTAINABLE UNIVERSITY: MEDIATING ROLE OF SUSTAINABLE HUMAN RESOURCE MANAGEMENT IN INDONESIA

Abstract

Sustainable universities play a role in evaluating and reporting on sustainable practices in developing countries. The study aims to identify human capital's impact on sustainable university performance by implementing sustainable human resource management (sustainable HRM) as a mediating variable. The paper uses a quantitative approach, with a sample of 140 employees consisting of lecturers and educational staff at Esa Unggul University, Jakarta, Indonesia. Data were collected using a Likert scale questionnaire and analyzed using structural equation modeling-partial least squares with SmartPLS 4.0 software. The results showed a positive and significant impact that was statistically proven by a direct impact of human capital and sustainable HRM on sustainable universities as well as an indirect impact of human capital on sustainable universities mediated by sustainable HRM. Furthermore, the results showed that the level of direct influence of human capital on sustainable universities has an influence value of 0.371, where the influence is categorized as weak. The level of indirect influence with sustainable HRM as a mediator between human capital and sustainable universities has an influence of 0.662 with a fairly strong/moderate influence. This proves that the role of sustainable HRM practices is an essential component in realizing a sustainable university. Empirical findings recommend increasing the capacity and quality of lecturers and education staff as the main component of university human capital to achieve sustainable higher education performance. Sustainable HRM practices need to be implemented thoughtfully by universities to improve performance from economic, environmental, and social aspects.

Keywords higher education performance, economic sustainability, environmental sustainability, social sustainability

JEL Classification M14, I23, O15, J24

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INTRODUCTION

The university is considered the foundation of a sustainable nation because it is an institution that prepares the next generation to compete in the era of globalization. This goal can be achieved by developing and maintaining collaborative learning environments (Wong, 2010). The current phenomenon in higher education is the acceleration of standardization of university management to the international level through the concept of a sustainable university (Nurhayati et al., 2023). Therefore, the country needs a sustainable university concept for its economic and social development. Universities and professionals interested in sustainable universities must understand that "sustainability" must be clearly defined and assessed while considering many factors (Schneider & Meins, 2012). The stakeholders responsible for the university's sustainability have diverse opinions and expectations on this subject. Higher education institutions must meet three main aspects of implementing sustainable performance: economic, environ-

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mental, and social (ESG) (Alghamdi et al., 2017). These three aspects can be realized through sustainable universities, where human capital is influenced by the idea of sustainable human resource management (sustainable HRM), which is a high foundation, namely, learning, research, and community service (Velazquez et al., 2006; Järlström et al., 2018).

A critical factor in realizing sustainable performance is ensuring that the human resources available within the organization have an excellent capacity to understand the organization's efforts to prioritize ecological aspects (Marques, 2017; Chen, 2008). To meet high standards of sustainable performance, organizations must ensure employees have the potential to develop competencies related to environmental care as a form of public responsibility (Fombrun & Shanley, 1990; Greening & Turban, 1996). According to Wagner (2013), sustainable HRM has a role in increasing employee awareness of environmentally friendly performance obtained through training and development and their involvement in green initiatives. Implementing sustainable HRM in organizations has been shown to change employee behavior patterns, increase environmental awareness, and support sustainable performance (Becker & Huselid, 2006; Cherian & Jacob, 2012). Many universities in Indonesia need help to achieve sustainable university performance. These demands force universities to have qualified lecturers and education staff as well as be able to provide them with opportunities to develop through environmentally oriented human resource management practices.

1. LITERATURE REVIEW AND HYPOTHESES

Universities, as educational institutions, can act as agents in promoting and practicing the principles of sustainable development in society (Filho et al., 2015). With their resources, sustainable universities can evaluate and report sustainable practices and the negative impacts of environmental damage (Amaral et al., 2015). Sustainable universities, also from ESG aspects, can support the main functions of teaching, research, outreach, and partnerships, as well as services to help society transition toward the importance of sustainability (Velazquez et al., 2006). A sustainable university can carry out a mission by committing to sustainability, engaging, and acting to mitigate adverse and detrimental impacts on ESG (Sonetti et al., 2016). Sustainable university commitment is reflected in its sustainability policies and daily activities while having the necessary means to achieve all its goals. A sustainable university, also known as the 'green campus,' represents the current strategy to promote sustainability in universities and refers to aspects such as green buildings, recycling, green transportation, and composting (Velazquez et al., 2006). One of the main goals of sustainable university development is to create a healthier internal and better external environment (Li et al., 2018). The university has an environmental responsibility and sustainability policy implemented consistently with the "Triple Bottom-Line" framework for sustainable development. Universities in Indonesia must fulfill three aspects to realize the achievements of sustainable universities, namely, ESG sustainability. ESG is developed through sustainable universities and is applied in Higher Education Tridharma activities. The concept of a sustainable university is again defined by all dimensions, including ESG factors (Celikdemir & Katrinli, 2016).

Human capital is defined as humans in an organization who have the characteristics of intelligence, skill, and expertise and can significantly contribute to the organization. Human elements in organizations are individuals or groups who can learn, change, innovate, and provide motivation for creativity that, when running well, can ensure long-term life support for the organization (Bontis et al., 1999). Human capital consists of the knowledge, skills, and abilities of people who work in an organization (Silitonga et al., 2020). Characteristics of human capital at universities include permanent professors, research activities, permanent and contract lecturers, achievements of lecturers, academic and non-academic qualifications, and non-academic staff. Human capital development plays a vital role in determining long-term sustainability that accelerates the evolution of human consciousness and the emergence of mentally aware individuals with the most effective approaches to ensure a sustainable future (Šlaus & Jacobs, 2011).

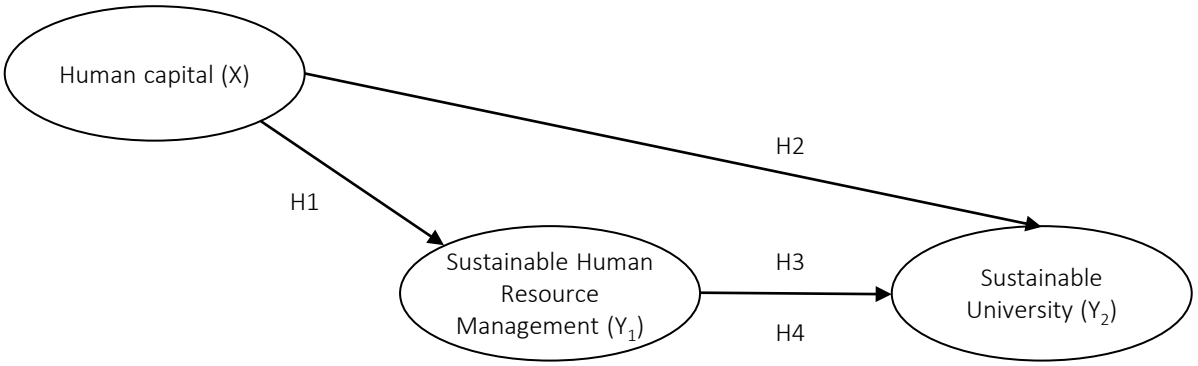

Figure 1. Conceptual model

The concept of sustainable human resource management (sustainable HRM) has developed into a widely discussed topic, so there has yet to be a definitive definition. The definition put forward by Ehnert (2009) aims to enable the achievement of organizational goals as well as reproducing the human resources base. In addition, another definition related to sustainable HRM is a pattern of human resource strategies and practices that are planned or emerge to achieve social, financial, ecological, and reproducible human resource bases in the long term (Kramar, 2014). Sustainable HRM is seen as an employee competency development strategy that positively impacts the company's sustainability in the future. Sustainable HRM practices play an essential role in implementing environmental policies to promote environmentally friendly practices in the workplace (Shoaib et al., 2021). Corporate sustainability covers broad aspects, including economy, employee development, environment and employability, health, participation, welfare, and equity of employees (Ehnert et al., 2014). Other findings related to the sustainable HRM concept are defined as adopting human resource management strategies and practices that are possible to achieve financial, social, and ecological goals by taking into account the impact of within and outside the organization in the long run by controlling unwanted side effects in the form of negative feedback (Ehnert et al., 2016).

Mascarenhas et al. (2017) found that university leaders are expected to increase the design of human capital management systems by measuring the performance of academic human capital and providing training and resources to improve, support, and maintain the overall welfare of academics to achieve ongoing performance. Furthermore, Wickham (2019) states that sustainable HRM can improve the organization's ability to innovate and satisfy customers to achieve sustainable performance that depends on economic, environmental, and social aspects. The research on tools to measure sustainable university is related to five vital benchmarks for holistic frameworks: management, academics, environment, involvement, and innovation (Alghamdi et al., 2017). Kara et al. (2023) revealed that environmentally friendly human resource management has a mediating influence on the success of organizational sustainability. Yong et al. (2023) prove that sustainable HRM positively impacts sustainable performance. Awwad Al-Shammari et al. (2022) found that green innovation mediated the relationship between sustainable HRM practices and sustainability.

Some literature related to the concept of sustainable university has emphasized the institutions' ability to improve and develop human resource management systems based on sustainable performance. This impacts competent human capital management and cares about green performance to produce quality and innovative human resources. In addition, with the practice of sustainable HRM, universities can increase organizational competitiveness and innovate to achieve sustainable performance that pays attention to economic, environmental, and social aspects (Wickham, 2019; Yong et al., 2023; Kara et al., 2023).

Based on above mentioned, this study aims to investigate the impact of human capital on sustainable university performance and find the mediating role of sustainable HRM practices at Esa Unggul University in Indonesia. Based on the literature review, the conceptual model is presented in Figure 1, and the research hypotheses are as follows:

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H1: Human resources have an impact on sustainable HRM.

H2: Human resources have an impact on sustainable universities.

H3: Sustainable HRM has an impact on sustainable universities.

H4: Human capital impacts sustainable universities through sustainable HRM as a mediator.

2. METHODS

The analysis was conducted at Esa Unggul University, a private university in Jakarta, Indonesia. The population in the study was Esa Unggul University employees, totaling 743 people, consisting of 583 lecturers and 160 education staff. The sample is determined based on the size of the population and the number of research variable indicators. The sample measurement method depends on the number of research indicators multiplied by 5 to get 140 samples. All items on each construct are measured on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The operational definitions of variables are given in Table 1.

Data analysis was carried out using partial least squares (PLS) structural equation modeling (SEM) technique.

3. RESULTS

The outer model measurement functions to evaluate the relationship between the construct and its indicators; the measurement of the model is divided into the validity and reliability tests. The first stage of the validity test through confirmation fac-

Table 1. Definitions of operational variables

No.	Variable	Dimensions	Indicator
1	Human Capital	a. Knowledge	1. Lecturer with S3 education and rank of professors 2. Qualifications of education staff (librarians, laboratories, technicians)
		b. Experience	3. Working period 4. Knowledge of the work given
		c. Creativity	5. Work in the team 6. Innovation in doing and producing a job
		d. Cultural values	7. Knowledge of university culture 8. Cultural practices in routine activities at work 9. Behavior in service to students
		e. Attitudes	10. Peer-coworker behavior and its impact on the university
2	Sustainable HRM	a. Competence development	1. Employees are given a clear career path 2. Universities carry out individual development of non-formal training (e.g., assignments and job rotations) 3. The university facilitates employees in carrying out formal educational activities 4. Leaders and employees share responsibility for career management 5. The university provides the opportunity for individuals to undertake extensive training programs
		b. Employee relations	6. The university treats employees as the most valuable resources in the organization 7. The university prioritizes employee satisfaction 8. A high level of employee motivation is essential for the university 9. Employees get an appreciation for the best performance
3	Sustainable University	a. Economic sustainability	1. Green curriculum innovation to attract international students 2. The involvement of the university in advancing the Indonesian economy 3. The role of the university in developing economic activities around the campus through research results
		b. Environmental sustainability	4. University policy for environmental care activities 5. Healthy, safe, and environment (HSE) facilities and infrastructure with international standards 6. The university is responsive to disaster prevention and management
		c. Social sustainability	7. The university's role is to provide scholarship programs for economically disadvantaged children 8. Joint social activities with cooperative partners 9. Alum involvement in activities that benefit the community

Table 2. Loading factor values

Variable	Indicator	Outer Loading Value	Requirement	Information
Human Capital	HC2	0.815	> 0.70	Valid
	HC3	0.763	> 0.70	Valid
	HC4	0.782	> 0.70	Valid
	HC5	0.763	> 0.70	Valid
	HC6	0.788	> 0.70	Valid
	HC7	0.886	> 0.70	Valid
	HC8	0.825	> 0.70	Valid
	HC9	0.748	> 0.70	Valid
	HC10	0.707	> 0.70	Valid
Sustainable HRM	SHRM1	0.817	> 0.70	Valid
	SHRM2	0.739	> 0.70	Valid
	SHRM3	0.894	> 0.70	Valid
	SHRM4	0.769	> 0.70	Valid
	SHRM5	0.856	> 0.70	Valid
	SHRM6	0.895	> 0.70	Valid
	SHRM7	0.809	> 0.70	Valid
	SHRM8	0.858	> 0.70	Valid
	SHRM9	0.842	> 0.70	Valid
Sustainable University	SU1	0.811	> 0.70	Valid
	SU2	0.825	> 0.70	Valid
	SU3	0.735	> 0.70	Valid
	SU4	0.812	> 0.70	Valid
	SU5	0.764	> 0.70	Valid
	SU6	0.757	> 0.70	Valid
	SU7	0.782	> 0.70	Valid
	SU8	0.758	> 0.70	Valid

tor analysis (CFA) used to identify the unobserved variable can be measured using each observed variable construct. An indicator meets the validity requirements if the loading factor value is > 0.70. The data processing results based on the loading factors of the three variables used in this study have met the loading factor requirements > 0.70, and the data are declared valid, as presented in Table 2.

Furthermore, after conducting the validity test, the next stage is to see the Average Variance Extracted (AVE) values. The AVE value is classified as good or fulfills if it has a value > 0.05. The values of the three research variables that have met the requirements > 0.05 are presented in Table 3.

Table 3. AVE results

Variable	AVE
HC	0.621
SHRM	0.693
SU	0.610

Note: HC = human capital; SHRM = sustainable human resource management; SU = sustainable university.

Values of reliability test results are declared reliable if they produce a composite reliability value above 0.7. The stages of the reliability test are also seen from the Cronbach's alpha test, and the constructed value is stated to be reliable with a Cronbach's alpha value > 0.6 (Taber, 2018). The output results from the reliability test based on the outer model meet the reliability test requirements with a composite reliability value above 0.7. The Cronbach's alpha value above 0.6 is shown in Table 4.

Table 4. Cronbach's alpha results

Variable	Composite Reliability	Cronbach's Alpha	Results
HC	0.926	0.923	Reliable
SHRM	0.948	0.944	Reliable
SU	0.913	0.909	Reliable

Note: HC = human capital; SHRM = sustainable human resource management; SU = sustainable university.

Next, the determination of the R-Square value in the sequence, which is 0.75, is stated by a robust model; 0.50 is declared a moderate model and 0.25 is declared a weak model. Based on the data processing results, the R-Square value for the sustainable HRM variable is 0.371, while for the sustainable university variable, it is 0.662, as presented in Table 5.

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Table 5. R-square (R2) value of the research model

Construct	R Square
Sustainable HRM	0.371
Sustainable University	0.662

Table 5 shows that the human capital variable can influence 37.1% of the sustainable HRM variable. Furthermore, the human capital and sustainable HRM variables can influence 66.2% of the sustainable university variable.

To calculate the value of Q^2, the study used the following formula:

$$Q^2 = 1 - \left(\left(1 - R_1^2\right)\left(1 - R_2^2\right).....\left(1 - R_x^2\right)\right) = \\ = 1 - \left(\left(1 - 0.371^2\right)\left(1 - 0.622^2\right)\right) = 0.516. \quad (1)$$

The results of calculating the Q^2 value have met the requirements for a Q^2 value > 0; this means that the research model has a predictive value with the observations produced by the model, and the parameter estimates are relevant.

The goodness of fit index (GOF) is also calculated manually from the square root of the AVE and average R-squares using the formula as follows:

$$GoF\ Index = \sqrt{AVE \cdot R^2} = \\ = \sqrt{\frac{0.621 + 0.693 + 0.610}{3} \cdot \frac{0.371 + 0.662}{2}} = \\ = 0.576. \quad (2)$$

The GOF value of 0.576 indicates that the overall model is appropriate. The next stage is the hypotheses testing related to the influence of the exogenous variable of human capital on the endogenous variable, namely the sustainable HRM variable and the sustainable university variable with partial testing or the indirect effect where the sustainable HRM variable is a mediator. The hypotheses results are presented in Table 6.

Referring to the hypothesis testing statistics in Table 6, the results are described as follows:

- As for H1, H0 is rejected because the T statistic results were 8.691 < from T table = 1.977 while the p-value < 0.000.
- As for H2, Ha is accepted because the t-test results are 2.725 < from T table = 1.977 while the p-value < 0.006.
- As for H3, Ha is accepted because the t-statistic results are 7.086 < from T table = 1.977 while the p-value < 0.000.
- As for H4, H0 is rejected because the t-statistical results are 5.056 < from T table = 1.977 while the p-value < 0.000.

Hypothesis testing results using the SmartPLS software can be seen in Figures 2 and 3.

4. DISCUSSION

The findings of the study describe the influence of sustainable HRM. Previous research states that a prosperous organization discovers that employees are the main contributors to sustainability and provide opportunities for the organization to achieve goals (Mishra, 2017; Ren & Jackson, 2020). Human resources are motives for strength that can affect the success and sustainability of an organization (Florea et al., 2013). Developing systematic sustainable HRM and optimizing the potential of human resources is a prerequisite for building and improving sustainable organizational performance (Chams & García-Blandón, 2019). So, it can be concluded that universities that have good human capital capacity will positively influence the management of sustainable HRM that is not only seen from a business point of view but tends to facilitate employees to be able to develop competence and maintain good

Table 6. Hypothesis testing

Relationship between constructs	Sample (O)	T-Stat. (|O/STDEV|)	P Values
Human Capital → Sustainable HRM	0.609	8.691	0.000
human capital → Sustainable University	0.275	2.725	0.006
Sustainable HRM → Sustainable University	0.617	7.086	0.000
Human Capital → Sustainable HRM → Sustainable University	0.375	5.056	0.000

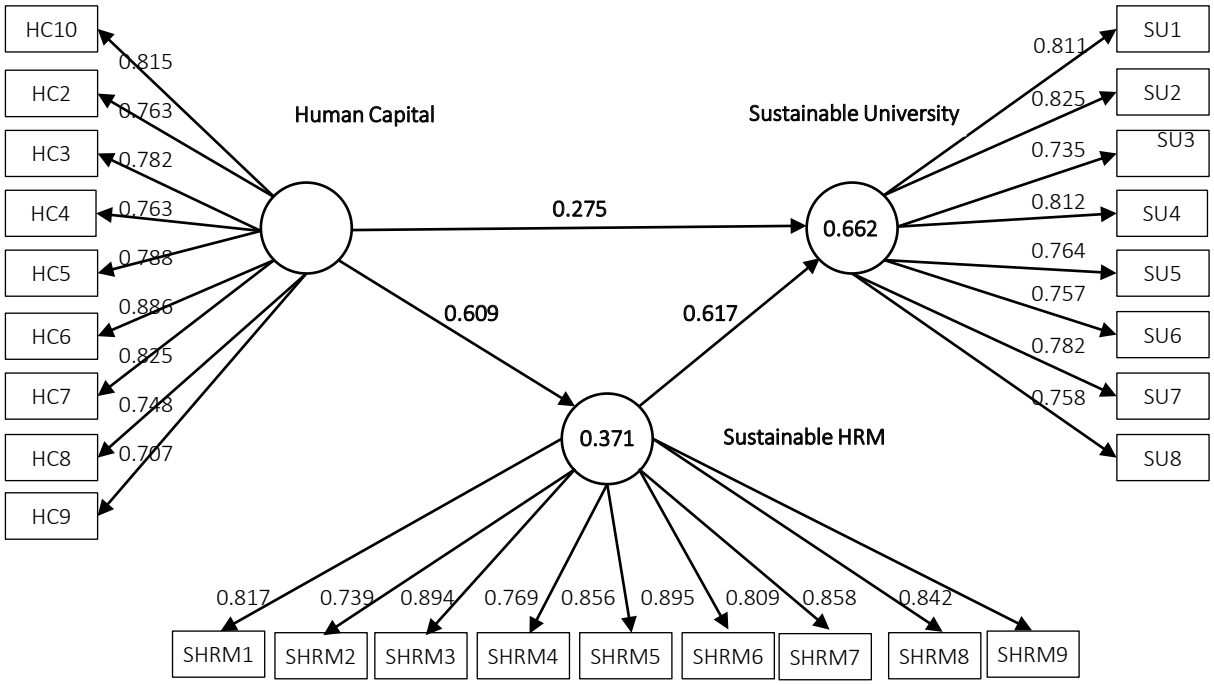

Figure 2. Outer model results

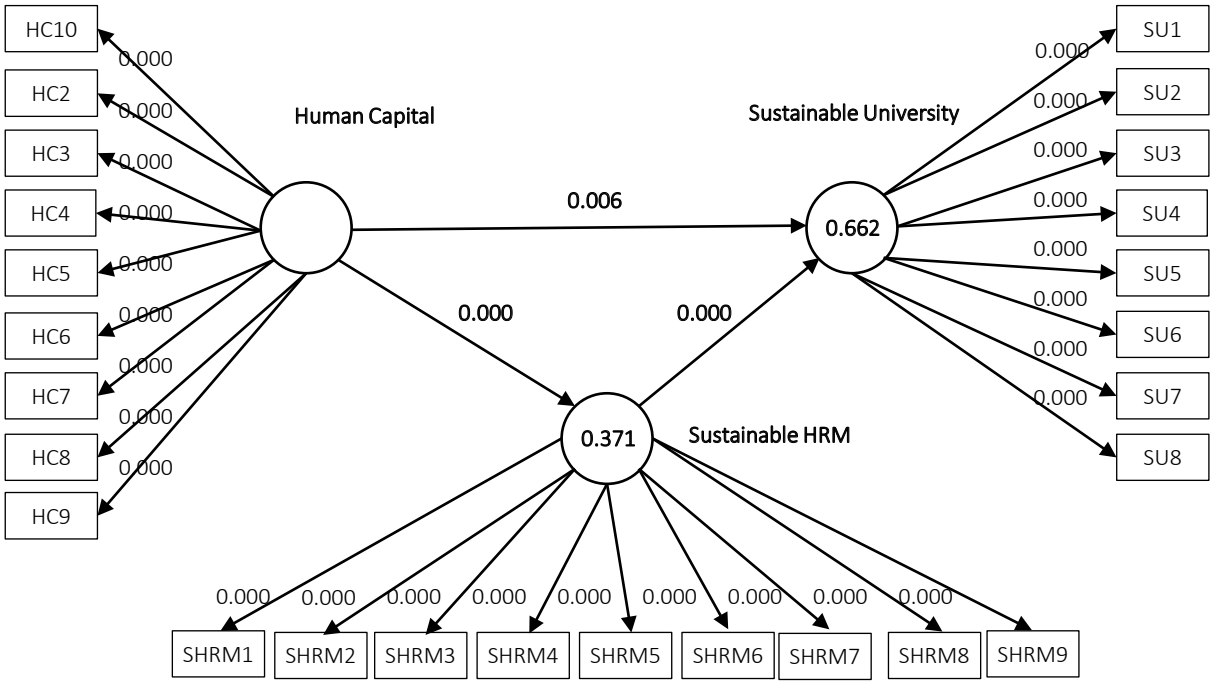

Figure 3. Hypothesis testing results

relations between universities and employees (lecturers and education staff).

The findings of this study show the influence of human capital on a sustainable university. Previous research relevant to the results of this study revealed that the system and assessment tool to measure the sustainability of the university using the sustainable university model provided perspectives related to "how people responsible for sustainability initiatives as their initial momentum booster to move forward in the process of becoming a sustainable university" (Velazquez et al., 2006). In the company sector at the individ-

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ual level, the human capacity to create knowledge to be transferred to the organization is a form of people's involvement in realizing sustainable performance (Yahya & Goh, 2002).

Business success and sustainability are supported by employees' knowledge, skills, and abilities, especially their positive attitudes toward the company, and the willingness to share the potential that results in achieving business goals has a more critical role than technology (Yong et al., 2020). Human capital is the skills, knowledge, and abilities of individuals who work in an organization. One of the human capital indicators related to innovation in carrying out and producing work is the indicator with the most determining influence in achieving a sustainable university (Šlaus & Jacobs, 2011). Based on previous studies, human capital positively influences sustainable university. These results can be reflected through the capacity and quality of employees at the university, which can encourage the improvement of sustainable university performance through performance results that can boost the aspects of the economy, environmental elements, and social aspects (Ricardianto et al., 2023).

The results of this study indicate the influence of sustainable HRM on sustainable universities. Ehnert et al. (2016) found that the concept of sustainable HRM was defined as the adoption of human resource management strategies and practices that were possible to achieve financial, social, and ecological goals by taking into account the impact within and outside the organization in the long run by controlling unwanted side effects in the form of negative feedback. Sustainable HRM can be implemented for employees who contribute to sustainable performance (Mousa & Othman, 2020). Some studies focus on sustainable HRM practices that emphasize the relationship between economic, environmental, and social aspects, which are the embodiment of the achievement of sustainable performance (Yong et al., 2020; Amjad et al., 2021; Ali Ababneh et al., 2021). Based on the previous research, it was concluded that sustainable HRM positively influenced sustainable universities. This was indicated by the realization of the sustainable HRM dimension related to competency development and good relations between employees and universities could improve sustainable performance that impacted economic, environmental, and social aspects.

The results of this study indicate the influence of human capital on sustainable universities through sustainable HRM. Employees increasingly acknowledge the importance of sustainable organizational performance by applying sustainable HRM practices (Obeidat et al., 2020; Davidescu et al., 2020). A company with good social/human and ecological/environmental practices has a positive performance impact through implementing sustainable HRM (Van Buren III, 2022). Human quality and capacity in the organization, accompanied by sustainable HRM practices in the form of recruitment, training, and rewards, can achieve sustainable organizational performance and create high competitiveness.

Quality and human capacity in organizations accompanied by sustainable HRM practices in the form of green recruitment, green training, and green rewards can improve and support sustainable organizational performance and can create competitor advantage (Deshpande & Srivastava, 2023; Vizano et al., 2021). The human capital owned by the university can create and support the achievement of sustainable universities, including economic, environmental, and social aspects, through efforts to practice sustainable HRM. The two dimensions include the development of competencies through training, seminars, conferences, and scientific and university relations with good employees (lecturers and education personnel), such as the sense of mutual need between universities and employees.

CONCLUSION

This study investigates the relationship and influence of human capital on sustainable universities mediated by sustainable HRM. The results showed a partial influence of human capital on sustainable university and sustainable HRM. In addition, sustainable HRM also has an impact as a mediator be-

tween human capital and sustainable university. The capacity of human capital (lecturers and education staff) owned by universities influences the production of sustainable university performance that considers the achievement of the triple bottom line, namely economic, social, and environmental aspects. Furthermore, the human capital capacity could significantly assist in implementing sustainable HRM practices that encourage realizing sustainable university performance.

This study has several limitations. First, with limited time and research funding, research samples included lecturers and education staff at only one of the largest private universities in Indonesia. Future research is expected to boost the sample coverage in several private and public universities for more meaningful results. Second, research on sustainable universities, especially in Indonesia, still needs to be improved, so it is hoped that future research can further explore the performance of sustainable universities in Indonesia, especially their impact on the environment. Third, this study only identifies the influence of human capital, focusing on the contribution of individual capacity (lecturers and education staff) through knowledge, experience, creativity, cultural values, and attitudes. However, the influence of other resources in higher education has yet to be identified, so this study recommends including other variables (e.g., intellectual capital and good university governance) to see their impact on sustainable university performance. Finally, future research should also explore further determining mediator variables (such as green behavior, green psychology climate, or green commitment) to expand the evidence of the effectiveness of sustainable HRM practices in universities.

AUTHOR CONTRIBUTIONS

Conceptualization: Yunata Kandhias Akbar, Sunda Ariana, Suharno Pawirosumarto.
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Writing – original draft: Yunata Kandhias Akbar, Sunda Ariana, Antonius Setyadi.
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