

## Driving Corporate Sustainability Through a Green HRM, Employee Engagement, and Green Innovation at PT GHP

Dian Noviati Puspitasari <sup>1)</sup>; Irfan Noviandy Aulia <sup>2)</sup>

<sup>1)</sup> [diannoviatipuspita@gmail.com](mailto:diannoviatipuspita@gmail.com), Department of Management, Faculty of Economics and Business, Universitas Mercu Buana

<sup>2)</sup> [irfan.noviandy@mercubuana.ac.id](mailto:irfan.noviandy@mercubuana.ac.id), Department of Management, Faculty of Economics and Business, Universitas Mercu Buana

Article Information:	Abstract in English
<p><b>Keywords:</b>            Keyword 1: Green Human Resources Management            Keyword 2: Employee Engagement            Keyword 3: Green Innovation            Keyword 4: Corporate Sustainability</p> <p><b>Article History:</b>            Received : February 10, 2025            Revised : March 18, 2025            Accepted : March 28, 2025</p> <p><b>Cite This Article:</b>    <i>Puspitasari, D. N., &amp; Aulia, I. N. (2025). Driving corporate sustainability through a green HRM, employee engagement, and green innovation at PT GHP. Indikator: Jurnal Ilmiah Manajemen dan Bisnis, 9(2), 12–20.</i>            Doi: <a href="https://doi.org/10.22441/indikator.v9i2.32922">https://doi.org/10.22441/indikator.v9i2.32922</a></p>	<p><i>Achieving sustainable economic growth while reducing environmental damage presents a significant challenge in the era of globalization and technological advancements. As primary contributors to greenhouse gas emissions, industries hold a pivotal position in advancing global initiatives aimed at meeting Sustainable Development Goals (SDGs). This study investigates the influence of Green Human Resource Management (GHRM) and Employee Engagement on Corporate Sustainability, with Green Innovation serving as a mediating variable on PT GHP. In this study, the researcher used a quantitative research type. The research model was analyzed using partial least squares structural equation modeling (PLS-SEM) with the Smart-PLS software, based on a sample of 56 respondents. The findings of this study reveal that GHRM and Employee Engagement have a positive and significant influence on Corporate Sustainability and Green Innovation. Furthermore, Green Innovation mediates the relationship between GHRM and Corporate Sustainability, while its mediating role on Employee Engagement is not statistically significant.</i></p>

### INTRODUCTION

In the modern era of globalization and technological advancement, a significant challenge for businesses and society is achieving sustainable economic growth without exhausting natural resources or causing harm to the environment. The negative environmental impacts resulting from business operations often present complex challenges that are difficult to address. The industrial sector is a significant contributor to greenhouse gas emissions, which exacerbate climate change and adversely affect environmental sustainability and human well-being. Industries are key players in global efforts to achieve Sustainable Development Goals (SDGs), with private sector participation and innovation in technology driving faster progress toward these objectives. In 2023, emission mitigation efforts have been prioritized, with the Indonesian government implementing policies to promote renewable energy, reduce deforestation, and encourage sustainable transportation. Collaboration among the public, private, and civil society sectors is essential for achieving climate change mitigation targets (Mambrasar, 2024).

Corporate Sustainability refers to an organization's ability to achieve business objectives, enhance long-term value, and consistently improve performance by integrating economic, social, and environmental values into its business strategy. Human resource management practices play a pivotal role in fostering employee engagement, which in turn enhances organizational performance (Deepalakshmi et al., 2024).

PT GHP is a manufacturing company specializing in environmentally friendly technology, with a mission to drive a shift in societal consumption and production patterns through innovative material solutions. Committed to environmentally responsible practices, PT GHP strives to positively impact local communities, the economy, and the environment. To identify the key variables influencing Corporate Sustainability at PT GHP and to provide an analysis that aligns with the company's context, researchers conducted interviews, survey, and reviewed prior studies.

There remain gaps in the existing research. According to Fhadhilah and Setyaningrum (2023), Green Human Resource Management has a positive and significant effect on business sustainability. Conversely, research conducted by Zihan and Makhbul (2024) suggests that Green Human Resource Management does not significantly influence corporate sustainability. Furthermore, Utami and Emilia (2024) found that Green Innovation positively affects corporate sustainability, while findings from Ainayah and Setyaningrum (2024) indicate that Green Innovation does not have a significant impact on business sustainability.

This research seeks to assist the company in recognizing and resolving these challenges while contributing to the existing research gap regarding the influence of green human resource management and employee engagement on corporate sustainability, with green innovation serving as a mediating variable. The specific objectives of this study are as follows:

1. To Identify and analyze the impact of Green Human Resources Management on Corporate Sustainability at PT GHP.
2. To Identify and analyze the impact of Employee Engagement on Corporate Sustainability at PT GHP.
3. To identify and analyze the impact of Green Human Resources Management on Green Innovation at PT GHP.
4. To identify and analyze the impact of Employee Engagement on Green Innovation at PT GHP.
5. To identify and analyze the impact of Green Innovation on Corporate Sustainability at PT GHP.
6. To identify and analyze the impact of Green Human Resources Management on Corporate Sustainability through Green Innovation at PT GHP.
7. To identify and analyze the impact of Employee Engagement on Corporate Sustainability through Green Innovation at PT GHP.

## **LITERATURE REVIEW**

### **Green Human Resources Management**

Green Human Resources Management (GHRM) is an approach to human resource management that focuses on sustainability and environmental impact (Ardiansyah, 2024). GHRM aims to develop and implement sustainable systems for a company's human resources (Ewaldo, 2023), as well as improve environmental outcomes (Nugroho, 2023).

As an emerging global trend, Green Human Resource Management is aimed at promoting environmentally conscious behaviors among employees within the workplace. GHRM helps reduce environmental damage caused by industrial operations and manage natural and human resources effectively and efficiently.

### **Employee Engagement**

According to Gallup (2017:231), it is stated that “*employee engagement as those who are involved in, enthusiastic about and committed to their work and workplace*”. Employees who were physically, mentally, and emotionally engaged in their job tasks were considered actively

engaged in the organization by the management (Sharma & Kumra, 2020). Employee engagement is a condition of motivation that focuses on achieving work or organizational goals (Amin and Riyanto, 2022).

### **Green Innovation**

Green Innovation (GI) consists of company products/services and processes/actions that are also aligned with other sustainable strategies implemented at the organizational level (i.e. GHRM policies) (Ghardallou, 2022; Bahmani et al., 2023; Liao et al., 2022). Green innovation according to Novitasari (2022) is new technology, practices, systems, and production processes used to reduce the impact of environmental damage.

### **Corporate Sustainability**

According to Pinem (2022), Corporate Sustainability is a company that is good at carrying out its operational activities and does not only focus on generating profitability (profit) but also has a sense of concern for society (people) and the environment (planet). Sustainability practices are believed to help companies reduce costs, increase the company's competitive advantage, increase the company's access to capital and markets, and help reduce risks (PWC in Deyas & Sidjabat, 2022).

## **RESEARCH METHOD**

This study uses a quantitative research design, utilizing primary and secondary data. The primary data in this study are in the form of interview results, observations and questionnaire results and secondary data in this study are in the form of literature studies (books and scientific journals), data obtained from companies, and the internet. The sampling technique in this study uses the Saturated Sampling Technique, where all populations in this study are used as samples. The samples taken were all employees of PT GHP as many as 56 people. The analysis was carried out using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS version 3.2.9.

## **RESULTS AND DISCUSSION**

### **Outer Model**

#### **Convergent validity**

The outer model shows how the construct is measured by its indicators. The validity of reflective indicators by correlating item scores with their score variables. In this study, the research indicators are considered to achieve convergent validity if the loading factor value exceeds 0,7 and is supported by an Average Variance Extracted (AVE) value greater than 0,5.

**Tabel 1. Convergent Validity**

Variable	Item	Outer Loading	AVE
Green Human Resources Management (X1)	X1.1.1	0.816	0.699
	X1.1.2	0.802	
	X1.1.3	0.884	
	X1.2.1	0.805	
	X1.2.2	0.908	
	X1.2.3	0.793	
	X1.2.4	0.865	
	X1.2.5	0.842	
	X1.3.1	0.838	

	X1.3.2	0.811	
	X1.3.3	0.871	
	X1.4.1	0.763	
	X1.4.2	0.856	
Employee Engagement (X2)	X2.1.1	0.789	0.676
	X2.1.2	0.825	
	X2.1.3	0.900	
	X2.2.1	0.882	
	X2.2.2	0.767	
	X2.2.3	0.850	
	X2.3.1	0.771	
	X2.3.2	0.717	
	X2.3.3	0.880	
Green Innovation (Z)	Z.1.1	0.745	0.650
	Z.1.2	0.849	
	Z.1.3	0.808	
	Z.2.1	0.807	
	Z.2.2	0.801	
	Z.2.3	0.870	
	Z.2.4	0.745	
Corporate Sustainability (Y)	Y.1.1	0.827	0.663
	Y.1.2	0.821	
	Y.2.1	0.735	
	Y.2.2	0.759	
	Y.3.1	0.820	
	Y.3.2	0.818	

Source: Data processed using SmartPLS, 2024

Based on the table, all indicators demonstrated strong validity, with loading factor values exceeding 0.7 and Average Variance Extracted (AVE) values above 0.5.

### Reliability Test

The purpose of reliability testing is to evaluate the consistency and trustworthiness of the measurement instrument. This study utilized composite reliability and Cronbach's alpha to assess reliability, with values above 0.7 indicating good reliability and confirming the questionnaire's consistency.

**Tabel 2. Reliability Test Results**

Variable	Composite Reliability	Cronbach Alpha
Green Human Resources Management (X1)	0.968	0.964
Employee Engagement (X2)	0.949	0.939
Corporate Sustainability (Y)	0.922	0.898
Green Innovation (Z)	0.928	0.910

Source: Data processed using SmartPLS, 2024

As shown in Table 2, the composite reliability and Cronbach's alpha values for all research variables surpass the 0.7 threshold, demonstrating that the research model meets the reliability standards. Consequently, the items used in this study are regarded as reliable and trustworthy.

### Inner Model

### Coefficient of Determination Test/R Square (R<sup>2</sup>)

Inner model testing involves developing a model grounded in theoretical concepts to examine the relationships between exogenous and endogenous variables outlined in the conceptual framework. The coefficient of determination, or R-Square, aims to quantify the extent to which the model explains the influence of specific exogenous latent variables on endogenous latent variables, thereby assessing its substantive impact. When the R-Square (R<sup>2</sup>) value approaches one, the independent variables collectively capture all the information needed to predict fluctuations in the endogenous variables.

**Tabel 3. R Square (R<sup>2</sup>) Value of Research Model**

Variable	R-Square (R <sup>2</sup> )	R-Square Adjusted
Corporate Sustainability (Y)	0.743	0.728
Green Innovation (Z)	0.687	0.675

Source: Data processed using SmartPLS, 2024

The R-Square results indicate a strong influence of Green Human Resources Management, Employee Engagement, and Green Innovation on Corporate Sustainability, accounting for 0.743 (74.3%) of its variance. Similarly, Green Human Resources Management and Employee Engagement moderately explain 0.687 (68.7%) of the variance in Green Innovation, with external variables accounting for the remaining variation.

### Hypothesis Testing

Hypothesis testing is used to test whether or not there is an influence of independent variables on dependent variables. In this study, the Path Coefficient & Indirect Effect analysis was used for hypothesis testing. A positive coefficient indicates a positive relationship (when one construct increases, the other tends to increase), while a negative coefficient indicates a negative relationship (when one construct increases, the other tends to decrease). More details are shown in the table below:

**Tabel 4. Path Coefficient**

	Relationship between Constructs	Original Sample (O)	Sample Mean (M)	T Statistics ( O/STDEV )	P Values	Results
<b>Direct Path</b>						
H1	X1 Green Human Resources Management -> Y Corporate Sustainability	0.323	0.316	2.049	0.041	Significantly positive influence
H2	X2 Employee Engagement -> Y Corporate Sustainability	0.320	0.325	2.677	0.008	Significantly positive influence
H3	X1 Green Human Resources Management -> Z Green Innovation	0.571	0.562	4.602	0.000	Significantly positive influence
H4	X2 Employee Engagement -> Z Green Innovation	0.306	0.320	2.510	0.012	Significantly positive influence
H5	Z Green Innovation -> Y Corporate Sustainability	0.293	0.300	2.686	0.007	Significantly positive influence
<b>Indirect Path</b>						



H6	X1 Green Human Resources Management -> Z Green Innovation -> Y Corporate Sustainability	0.167	0.169	2.133	0.033	Significantly positive influence
H7	X2 Employee Engagement -> Z Green Innovation -> Y Corporate Sustainability	0.090	0.095	1.786	0.075	No significant influence

Source: Data processed using SmartPLS, 2024

### **The Influence of Green Human Resources Management on Corporate Sustainability**

Based on the results of data analysis, it was found that Green Human Resource Management has a positive and significant impact on Corporate Sustainability at PT GHP with the most dominant indicator being that the company establishes environmental responsibilities to employees, for example minimizing the use of printed paper in work activities and minimizing the use of electricity. This shows that Green Human Resource Management is able to influence Corporate Sustainability to increase the efficiency of resource use, reduce negative environmental impacts, and strengthen the company's reputation as an environmentally responsible organization.

This is in line with research conducted by (Fhadhilah & Setyaningrum, 2023) green human resource management has a significant positive effect on corporate sustainability. In addition, the research results (Zhao & Huang, 2022) stated that Green Human Resource Management has a significant influence and is directly related to sustainable business performance. The study's findings indicate that incorporating green principles into human resource management effectively addresses HR issues, enabling employees to perform business processes that align with the environmental and social expectations of consumers and the broader community.

### **The Influence of Employee Engagement on Corporate Sustainability**

Based on the results of data analysis, it was found that Employee Engagement has a positive and significant impact on Corporate Sustainability at PT GHP. This shows that Employee Engagement can improve the sustainability of the company. With high involvement, employees are more motivated to contribute to efforts to reduce environmental impacts and increase operational efficiency which ultimately strengthens the sustainability of the company as a whole. The indicator of Employee Engagement that is very dominant is that employees have a strong drive within themselves to achieve the goals that have been set.

The results of this study are in line with research conducted by (Lestari & Nawangsari 2022) which states that Employee Engagement has a significant positive effect on Corporate Sustainability. This study highlights that higher levels of employee engagement lead to greater voluntary participation in environmental restoration efforts. Employee engagement in the workplace is recognized as a key factor in achieving sustainable organizational success.

### **The Influence of Green Human Resources Management on Green Innovation**

Based on the results of data analysis, it was found that Green Human Resource Management has a positive and significant impact on Green Innovation at PT GHP. This shows that Green Human Resource Management is able to influence Green Innovation to encourage employees to create innovative solutions that focus on sustainability and resource efficiency. With the implementation of Green Human Resource Management practices, employees become more aware of the importance of green innovation and are more motivated to contribute to the development of more environmentally friendly products and processes. This not only helps

reduce negative impacts on the environment but also increases the company's competitiveness through sustainable innovation.

The results of this study are in line with research conducted by (Putri & Nugroho, 2024) and (Kanan et al., 2023) stating that Green Human Resources Management has a positive and significant influence on Green Innovation. This study emphasizes that enhancing employees' green capabilities allows organizations to provide more eco-friendly products and services by minimizing waste and pollution during manufacturing. It also fosters green managerial and marketing innovations, thereby boosting the company's competitive edge.

#### **The Influence of Employee Engagement on Green Innovation**

The data analysis indicates that Employee Engagement has a significant and positive effect on Green Innovation at PT GHP. This suggests that actively engaged employees are more inclined to support and take part in the company's green innovation initiatives. Employees who feel involved and appreciated will be more likely to put forward new ideas that can help the company in developing environmentally friendly solutions.

In the research results (Putri & Nugroho, 2024), stated that employees who are actively involved tend to be more creative and proactive in seeking new solutions, such as producing innovative ideas that focus on sustainability, because they feel they have a responsibility towards the environment.

#### **The Influence of Green Innovation on Corporate Sustainability**

Based on the results of data analysis, it was found that Green Innovation has a positive and significant impact on Corporate Sustainability at PT GHP. So this means that the higher the level of Green Innovation, the higher the level of Corporate Sustainability because green innovation allows companies to develop more efficient and environmentally friendly products and processes. By reducing waste and emissions, and increasing the efficiency of resource use, companies can achieve long-term sustainability. In addition, green innovation can also improve the company's reputation in the eyes of consumers and stakeholders, which ultimately strengthens the company's competitiveness in the market.

The results of this study are in line with research conducted by Utami & Emilia, 2024 which states that there is a positive influence between Green Innovation and Corporate Sustainability. This study explains that the rise in environmentally friendly practices and the adoption of eco-friendly products with minimal environmental impact are key factors. As a result, implementing green innovations can significantly assist companies in achieving sustainability.

#### **Green Innovation Mediates the Effect of Green Human Resources Management on Corporate Sustainability**

The data analysis reveals that Green Human Resource Management has a significant and positive influence on Corporate Sustainability at PT GHP, mediated by Green Innovation. This can be interpreted that the implementation of environmentally friendly GHRM practices not only increases employee awareness and involvement in sustainability efforts but also encourages green innovation in the company. Green Innovation acts as a mediator that strengthens the relationship between GHRM and Corporate Sustainability.

The findings of this study are in line with previous studies that found that there is a mediating relationship between environmentally friendly innovation and GHRM practices and sustainable performance relationships (Kanan, et al., 2023). Furthermore, the findings of this study suggest that green innovation involves transforming traditional products, services, processes, as well as managerial and marketing practices into more environmentally friendly versions to enhance sustainable performance.

## **Green Innovation Mediates the Effect of Employee Engagement on Corporate Sustainability**

Based on the results of data analysis, it was found that Employee Engagement has a positive but insignificant impact on Corporate Sustainability through Green Innovation at PT GHP. Although employee engagement can encourage green innovation, its impact may not be strong enough to significantly mediate the relationship between employee engagement and corporate sustainability. Companies can improve the effectiveness of green innovation as a mediator between employee engagement and corporate sustainability to achieve better sustainability by encouraging employee involvement in the green innovation process. This can be done by involving employees in decision-making, providing space for them to put forward new ideas, and creating work teams that focus on green innovation projects.

## **CONCLUSION**

The findings of the study at PT GHP indicate that Green Human Resource Management (GHRM) and Employee Engagement positively and significantly influence Corporate Sustainability and Green Innovation. GHRM practices are proven to foster sustainable innovation and enhance corporate competitiveness, while high levels of employee engagement facilitate the implementation of green initiatives and the adoption of sustainable behaviors. Furthermore, Green Innovation plays a pivotal role in strengthening the relationship between GHRM and Corporate Sustainability, positively contributing to environmental, social, and economic performance. However, the effect of Employee Engagement on Corporate Sustainability through Green Innovation, while positive, is not statistically significant, highlighting the need for improved management strategies to optimize employee contributions toward corporate sustainability goals.

## **REFERENCE**

- Amin, K., & Riyanto, S. (2022). Strategi Employee Engagement dalam Meningkatkan Motivasi Kerja Karyawan di PT. X. *JOSR: Journal of Social Research*. <http://ijsr.internationaljournallabs.com/index.php/ijsr>.
- Aradiansyah, T. L. S. I., Hui, M., Sentoso, A., & Ikrom, Z. (2024). Analisa Corporate Social Responsibility Dan Green Human Resources Management Pada “Gojek”. *Musyitari: Neraca Manajemen, Akuntansi, dan Ekonomi*, 3(4), 54-64.
- Bahmani, S., Farmanesh, P., & Khademolomoom, A. H. (2023). Effects of green human resource management on innovation performance through green innovation: Evidence from northern Cyprus on small island universities. *Sustainability*, 15(5).
- Deyas, C, E., & Sidjabat, M, R. (2022). Pengaruh Corporate Sustainability Reporting Terhadap Profitabilitas Perusahaan Non-Keuangan di Indonesia Pada Periode 2015 – 2019. *Jurnal Manajemen dan Usahawan Indonesia*. Vol.45 No.2 77-93. <https://scholarhub.ui.ac.id/jmui/vol45/iss2/6>
- Dr. N. Deepalakshmi, et al. (2024) Employee Engagement And Organizational Performance: A Human Resource Perspective, *Educational Administration: Theory and Practice*, 30(4), 5941-5948, Doi: 10.53555/kuey.v30i4.2323.
- Ewaldo, D., Tjan, C., Selli, S., & Kalalo, P. A. (2023). Analisa Corporate Social Responsibility (Csr) Dan Green Human Resource Management (Ghrm) Pada Pt Unilever Indonesia. *Neraca: Jurnal Ekonomi, Manajemen dan Akuntansi*, 1(5), 638-646.
- Gallup. (2017). State of the Global Workplace. In *Employee Engagement Insights for Business Leaders Worldwide*. Gallup Press.



- Ghardallou, W. (2022). Corporate Sustainability and Firm Performance: The Moderating Role of CEO Education and Tenure. *Sustainability* (Switzerland), 14(6). <https://doi.org/10.3390/su14063513>.
- Ghozali, Imam dan Hengky Latan (2015). *Partial Least Squares Konsep Teknik dan Aplikasi dengan Program Smart PLS 3.0*. Semarang: Universitas Diponegoro Semarang.
- Hair, F. Jr, Joseph., Hult, G. Thomas M., Ringle, Christian M., Sarstedt, Marko., Danks, Nicholas P., and Ray, Soumya. (2021). *Partial Least Squares Structural Modeling (PLS-SEM) Using R*. Springer Nature, Switzerland.
- Hamid, R.S. dan Anwar, S.M. (2019). *Structural Equation Modeling (SEM) Berbasis Varian: Konsep Dasar dan Aplikasi dengan Program SmartPLS3.2.8 dalam Riset Bisnis*. Jakarta: PT Inkubator Penulis Indonesia.
- Hussein, A.S. 2015. *Penelitian Bisnis dan Manajemen Menggunakan Partial Least Square (PLS) dengan smartPLS 3.0*. Fakultas Ekonomi dan Bisnis Universitas Brawijaya.
- Kanan, M., Taha, B., Saleh, Y., Alsayed, M., Assaf, R., Hassen, M. B., Alshaibani, E., Bakir, A., & Tunsu, W. (2023). *Green Innovation as a Mediator between Green Human Resource Management Practices and Sustainable Performance in Palestinian Manufacturing Industries*. MDPI, *Sustainability* 2023, 15, 1077. <https://doi.org/10.3390/su15021077>.
- Lestari, S., & Nawangsari, L. C. (2022). The Influence of Employee Engagement to Support Corporate Sustainability at PT Wiza. *JRSSEM*. Vol. 2, No. 1, 83–99. DOI:10.36418/jrssem.v2i1.243.
- Liao, Yu., Qiu, X., Wu, A., Sun, Q., Shen, H., & Li, P., (2022). Assessing The Impact Of Green Innovation On Corporate Sustainable Development. *Frontiers in Energy Research*. doi: 10.3389/fenrg.2021.800848.
- Mambrasar, G. B., (2024). *Indonesia Perlahan Tapi Pasti Mencapai Target SDGs Tahun 2030*. CNBC Indonesia.
- Novitasari, M. (2022). *Jurnal Sustainable*. Jurnal Sustainable, 01(1), 84–103.
- Nugroho, M. A., & Tiarapuspa, T. (2023). Pengaruh Green Culture, Green Transformational Leadership, Green Human Resource Management Terhadap Green Organizational Citizenship Behavior. *ETNIK: Jurnal Ekonomi dan Teknik*, 2(4), 350-359.
- Pinem, D., & Aulia, S. (2022). The Effect of Corporate Sustainability Performance on the Values of Companies Listed in the Sri Kehati Index. *Formosa Journal of Sustainable Research*, 2(3), 713-734.
- Sharma, P. K., & Kumra, R. (2020). Relationship between workplace spirituality, organizational justice, and mental health: Mediation role of employee engagement. *Journal of Advances in Management Research*, 17(5), 627–650. <https://doi.org/10.1108/JAMR-01-2020-0007>
- Sugiyono. (2019). *Metode Penelitian Pendidikan (Pendekatan Kuantitatif, Kualitatif, dan R&D)*. Bandung : Alfabeta.
- Utami, A. P., & Emilia, N. (2024). Pengaruh *Green Human Resource Management, Green Innovation, Perceived Organizational Support dan Risk-Taking Corporate Sustainability*. *PUBLIK: Jurnal Manajemen Sumber Daya Manusia, Administrasi dan Pelayanan Publik*. Vol. 11 No.1. 314-330.
- Zhao, W., & Huang, L. (2022). The impact of green transformational leadership, green HRM, green innovation and organizational support on the sustainable business performance: evidence from China. *Economic Research-Ekonomika Istraživanja*. Vol. 35, No. 1, 6121–6141. <https://doi.org/10.1080/1331677X.2022.2047086>.