



GREEN HRM PRACTICES AND SUSTAINABLE PERFORMANCE: EXAMINING THE ROLE OF GREEN TRANSFORMATIONAL LEADERSHIP

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Abstract

This study examines the influence of green human resource management (GHRM) practices on sustainable performance, with green transformational leadership (GTL) as a mediating variable. Conducted at a brown sugarcane factory in Malang, the research addresses sustainability challenges in the manufacturing sector. Using a quantitative approach, data were collected from 172 employees through purposive random sampling and analysed using Structural Equation Modeling (SEM) with SMART PLS. The results indicate that GHRM practices significantly enhance sustainable performance, particularly in environmental, social, and economic aspects. GTL strengthens the implementation of GHRM and directly contributes to improved sustainability outcomes. While GTL partially mediates the relationship between GHRM and sustainable performance, the direct impact of GHRM remains more dominant. This study provides novel insights into the mediating role of GTL in strengthening the link between GHRM practices and sustainable performance, particularly in the manufacturing sector. Managers should adopt GTL to foster an environmentally responsible culture, motivate employees, and improve performance. Policymakers are urged to integrate green HR and leadership practices, while companies should invest in green training, external collaborations, and eco-friendly technologies to boost sustainable performance.

Kata Kunci:

Kepemimpinan

Transformasional Hijau;

Kinerja Berkelanjutan;

Manajemen Sumber Daya

Manusia Hijau;

Praktik Hijau;

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Abstrak

Penelitian ini mengkaji pengaruh praktik manajemen sumber daya manusia hijau (GHRM) terhadap kinerja keberlanjutan, dengan pemimpin transformasional hijau (GTL) sebagai variabel mediasi. Penelitian ini dilakukan di pabrik gula merah tebu di Malang untuk menjawab tantangan keberlanjutan di sektor manufaktur. Dengan pendekatan kuantitatif, data dikumpulkan dari 172 karyawan melalui *purposive random sampling* dan dianalisis menggunakan *Structural Equation Modeling* (SEM) dengan SMART PLS. Hasil penelitian menunjukkan bahwa praktik GHRM secara signifikan meningkatkan kinerja keberlanjutan, khususnya dalam aspek lingkungan, sosial, dan ekonomi. GTL memperkuat implementasi GHRM dan secara langsung berkontribusi pada peningkatan kinerja keberlanjutan. Meskipun GTL memediasi sebagian hubungan antara GHRM dan kinerja keberlanjutan, pengaruh langsung GHRM tetap lebih dominan. Studi ini memberikan wawasan baru mengenai peran mediasi GTL dalam memperkuat hubungan antara praktik GHRM dan kinerja keberlanjutan, khususnya di sektor manufaktur. Manajer disarankan mengadopsi GTL untuk membangun budaya yang bertanggung jawab terhadap lingkungan, memotivasi karyawan, dan meningkatkan kinerja. Pembuat kebijakan didorong untuk mengintegrasikan praktik HR hijau dan kepemimpinan, sementara perusahaan disarankan berinvestasi dalam pelatihan hijau, kolaborasi eksternal, dan teknologi ramah lingkungan untuk meningkatkan kinerja keberlanjutan.

INTRODUCTION

Sustainability has increasingly become an essential factor for businesses globally. According to business ethics studies, ethical companies must balance sustainable performance, encompassing financial, social, and environmental outcomes (Alsayegh et al., 2020; Bazhenova et al., 2012). For example, Unilever's Sustainable Living Plan contributed to 75% of the company's growth, demonstrating that sustainability initiatives can drive profitability while benefiting society and the environment (Unilever, 2021). Similarly, as a founding member of the '1% for the Planet' initiative, Patagonia donates 1% of its total sales to environmental groups and ensures fair labour practices, with over 85,000 workers benefiting from its Fair Trade program (Patagonia, 2021). Sustainability has emerged as a key agenda as corporate awareness grows. This concern is reflected in the United Nations' 2030 Agenda, particularly Goals 12 and 13, which emphasise reducing resource use, degradation, and pollution to enhance quality of life. 93% of the world's top 250 companies have set sustainability goals. Sustainability reports are essential for discovering company activities regarding sustainability performance in the economic, environmental and social fields (Channuntapipat, 2021). Today, businesses are not solely profit-focused but are also responsible for preserving natural resources and maintaining social harmony. Companies operating in a highly competitive global economy must be efficient and socially accountable (Yong et al., 2020). Aligned with the Triple Bottom Line theory (Elkington, 1997), businesses must adapt to sustainable operations across three key areas: economic growth, social equity, and environmental protection (Nguyen, 2023). However, balancing these three aspects often proves challenging and controversial (George et al., 2015; Haffar & Searcy, 2017).

The manufacturing sector is a key driver of the national economy while also contributing to environmental pollution (Malik et al., 2021). In East Java, one of the largest sugar-producing regions, GMT Kelang factory produces brown sugar derived from sugarcane. However, the factory faces intense competition from local private sugar mills, leading to a 20% decline in sugar production between 2020 and 2023. This reduction has directly impacted profitability, making sustaining operations while maintaining environmental compliance more challenging. GMT Kelang has explored cost reduction and quality improvement strategies to enhance efficiency and sustainability. However, intensified competition has pressured the factory to cut costs, indirectly contributing to weaknesses in waste management. Waste from processed sugarcane condensate and factory operations has failed to meet government regulations. The increased wastewater volume and poor quality have resulted in fines and local complaints, emphasising the urgent need to address environmental concerns as part of the factory's sustainability efforts.

The company has recognised that improving environmental performance requires waste reduction and strategic management of its human resources. To address these challenges, GMT Kelang has implemented Green Human Resource Management (GHRM) practices, focusing on raising environmental awareness among employees and promoting sustainable waste management practices. These initiatives align with the Resource-Based View (RBV) theory (Wernerfelt, 1984), which asserts that sustainable competitive advantage arises from unique and inimitable resources, such as a company's human capital (Kholis, 2020). Research indicates that organisations can achieve sustainability goals by engaging employees in green HR practices, including green training, environmental rewards, and employee involvement in environmental initiatives (Muchtadin, 2022; Renwick et al., 2008). According to (Cherian & Jacob, 2012; Yafi et al., 2021), designing environmental training based on training needs is critical to achieving optimal ecological benefits. At GMT Kelang factory, implementing GHRM is expected to reduce waste, enhance compliance, foster stronger relationships with stakeholders, and ensure long-term sustainability. Nevertheless, previous research presents varying results regarding the direct and partial effect of GHRM on sustainable

performance (Goni et al., 2023; Singh et al., 2020; Tanova & Bayighomog, 2022). While some studies suggest that GHRM can improve environmental or sustainable performance (Masri & Jaaron, 2017), its broader impact on sustainability goals remains unclear without the mediation of other factors, such as leadership. Increasing public awareness of the environmental crisis by building relationships of mutual trust (Cahyadi et al., 2023). Green Transformational Leadership (GTL) is recognised as a crucial intermediary element. GTL, which engages employees through motivation and intellectual stimulation, is believed to enhance the effectiveness of GHRM practices (Kemalasari & Wanasiri, 2023; Noor et al., 2023).

With these findings, GMT Kelang focuses on integrating Green Transformational Leadership (GTL) to strengthen GHRM practices (Fathussalam et al., 2021). GTL is expected to motivate employees, foster an environmentally conscious culture, and improve the factory's overall sustainable performance. The combination of GHRM and GTL is hypothesised to have both direct and indirect effects on sustainable performance, as GTL amplifies the impact of GHRM by motivating employees and promoting sustainable behaviours. Given the inconsistencies in prior studies and current challenges at GMT Kelang, this research aims to explore how GHRM and GTL collectively influence sustainable performance. The findings will provide insights into how leadership can enhance the effectiveness of GHRM practices, ultimately leading to better environmental, economic, and social outcomes for the company.

Sustainable performance encompasses the balance of business operations' economic, social, and environmental aspects, aligning with the Triple Bottom Line (TBL) principles (Elkington, 1997). According to the World Commission on Environment and Development, this framework requires businesses to prioritise financial profit and positive impacts on society and the environment. Sustainability indicators include environmental management practices like waste reduction and emissions control, social aspects such as employee well-being and community engagement, and economic elements emphasising efficiency, innovation, and governance (Dyllick & Hockerts, 2002; Hristov & Chirico, 2019). Internal factors, such as leadership and resource management, alongside external influences like government regulations and community support, shape sustainable outcomes (Epstein & Buhovac, 2014). By integrating social and environmental standards into business practices, sustainability addresses global challenges, ensuring present needs are met without compromising future generations. This approach allows businesses to improve efficiency, manage risks, and create innovative opportunities supporting sustainable development (Rosati & Faria, 2019).

Green Human Resources Management (GHRM) is a strategic approach to human resource management aimed at promoting environmentally friendly behaviour in the workplace, enhancing awareness of sustainability, and fostering an organisational culture that supports sustainability efforts (Astuti & Wahyuni, 2018; Renwick et al., 2013). This study uses the AMO (Ability, Motivation, and Opportunity) theory to explain how GHRM practices influence sustainable corporate performance. According to the AMO framework, ability, motivation, and opportunity are key factors affecting individual performance. In the GHRM context, the AMO theory emphasises the importance of developing knowledgeable, motivated, and equally empowered employees to implement eco-friendly practices (Renwick et al., 2013).

Green Transformational Leadership (GTL) extends transformational leadership theory, emphasising environmental sustainability. Green transformational leaders inspire and motivate employees to engage in environmentally friendly initiatives, fostering an organisational culture supportive of sustainability and implementing eco-friendly practices (Bass, 1990; Buil et al., 2019; Du & Yan, 2022; Hadi, 2018). Acting as role models, they inspire, encourage creativity, and offer individualised attention to employees to achieve environmental goals (Krishnan, 2002; Robertson & Barling, 2017). By creating a work environment conducive to sustainability initiatives, GTL

contributes to enhanced operational efficiency, waste reduction, and resource optimisation. These actions improve organisational sustainable performance and bolster reputation among stakeholders.

Resource-Based View (RBV), introduced by (Wernerfelt, 1984), is a strategic framework emphasising the importance of managing unique and valuable internal resources to achieve a competitive advantage. When applied to Green Human Resources Management (GHRM), RBV underscores how organisations can leverage human resource practices to support environmental and sustainability initiatives (Jabbour et al., 2010; Sulistiawan et al., 2024). By fostering environmentally conscious behaviours and developing a sustainable organisational culture, GHRM serves as a critical internal resource for achieving long-term competitiveness and sustainability. Studies have consistently demonstrated a positive and significant relationship between GHRM practices and sustainable performance. Research by (Awwad et al. 2022; Khan et al., 2020; Mousa & Othman, 2020; Renwick et al., 2008; Zhao & Huang, 2022) highlights that GHRM not only enhances environmental and operational outcomes but also strengthens an organisation's sustainability performance by integrating green initiatives into HR practices. Based on prior studies and the theoretical foundation of RBV, this research proposes the following hypothesis:

H₁: Green Human Resources Management (GHRM) practices directly affect Sustainable Performance (SP).

Green Transformational Leadership (GTL) fosters a green ideology within organisations. GTL refers to leadership practices that inspire and motivate employees to adopt sustainable behaviours, aligning individual goals with broader environmental objectives (Fathussalam et al., 2021). This leadership style emphasises the importance of senior management support and supervision in encouraging environmentally friendly actions among employees, such as reducing resource use and minimising pollution. According to (Noor et al., 2023), GTL significantly and positively impacts employee engagement in green practices and moderates the relationship between Green Human Resource Management (GHRM) and employee involvement. The foundational goal of GHRM is to develop, motivate, and provide opportunities for employees to demonstrate superior work behaviours that contribute to sustainable competitive advantage and exceptional performance (Boxall & Steeneveld, 1999; Khan, 2018). Leadership that actively supports green initiatives acts as a catalyst for enhancing GHRM practices, ensuring that sustainability principles are effectively integrated into the organisation's HR processes. Based on the theoretical insights and empirical findings, this research proposes the following hypothesis:

H₂: Green Transformational Leadership (GTL) positively affects Green Human Resource Management (GHRM) practices.

Green Transformational Leadership (GTL), rooted in the transformational leadership theory developed by (Burns, 1978), emphasises the role of leaders in inspiring and motivating their followers to achieve exceptional results while cultivating their leadership potential. In the context of sustainability, GTL emerges as a specialised form of transformational leadership that focuses on green initiatives and environmental sustainability. By aligning organisational goals with sustainable practices, GTL fosters a culture of innovation and responsibility that directly contributes to enhanced organisational performance. Leaders exhibiting GTL embody high-level managerial values, attitudes, and behaviours and drive initiatives that support the organisation's long-term sustainability goals. This leadership approach has been shown to improve sustainable performance directly (SP) by enhancing environmental outputs and integrating sustainability into core business operations (Arshad, 2021; Fhadilah & Setyaningrum, 2023; Lenka & Kar, 2021). Building on this theoretical framework and empirical findings, the following hypothesis is formulated:

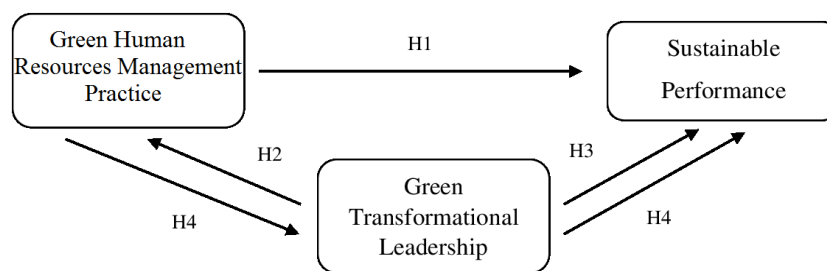
H₃: Green Transformational Leadership (GTL) positively affects sustainable performance (SP).

Green Transformational Leadership (GTL) not only influences sustainable performance directly but also serves as a mediator between Green Human Resources Management (GHRM) practices and

organisational sustainability outcomes (Nawang Sari & Yanti, 2019). By shaping employee behaviours and fostering an environmentally conscious culture, GTL bridges the gap between HRM initiatives and their ultimate impact on sustainable performance (SP). The mediating role of GTL is supported by the Ability-Motivation-Opportunity (AMO) theory, which highlights how employee ability, motivation, and opportunities—enhanced by leadership and HRM practices—contribute to organisational performance. Studies such as those by (Elshaer et al., 2021; Setyaningrum & Wulandari, 2024) underline the necessity of a mediating variable, as GHRM does not consistently yield direct impacts on SP without leadership influence. This aligns with (Mansoor et al., 2021), who found that GTL partially mediates the relationship between green management initiatives and green creativity. Empirical evidence, including research by (Goni et al., 2023 Purwaningsih et al., 2023 Widisatria & Nawangsari, 2021), confirms the significant mediating effect of GTL in fostering sustainable performance through green HRM practices. Based on the theoretical framework and prior research findings, the following hypothesis is formulated:

H₄: Green Transformational Leadership (GTL) mediates the relationship between Green Human Resources Management (GHRM) practices and sustainable performance (SP).

Based on the literature review and hypotheses presented above, the research model illustrates the relationship between GHRM and SP with the mediating role of GTL, as depicted in Figure 1.



Source: Research Data, 2024

Figure 1. Research Model

RESEARCH METHOD

This research adds to the existing literature by exploring the mediating effect of GTL. It also seeks to address the company's issues by delving deeper into the relationship between GHRM, GTL, and SP to help the factory balance economic, social, and environmental performance in line with sustainability principles. Based on the literature review and hypotheses presented above, the research model illustrates the relationship between GHRM and SP with the mediating role of GTL. This study involved all employees of the GMT Kelang Factory, totalling 300 individuals. The sample size for each division was determined using purposive random sampling to represent the number of employees in each division proportionally. Purposive random sampling ensures that respondents have relevant experience in GHRM and sustainability while maintaining objectivity and reducing selection bias. The questionnaire was structured into four sections: (1) demographic information, capturing respondents' background details; (2) Green Human Resource Management (GHRM) practices, assessing green training, assessment and rewards, and employee involvement; (3) Green Transformational Leadership (GTL), evaluating leadership influence on environmental sustainability; and (4) Sustainable Performance, measuring environmental, social, and economic outcomes. All items were measured using a Likert scale to gauge employees' perceptions of these variables.

Following Slovin's formula, 172 respondents participated, and the sample size was deemed sufficient based on the minimum threshold for representative samples. Path analysis used Structural Equation Modeling (SEM) with SMART PLS as the statistical tool. SEM was chosen for its ability to simultaneously analyse complex relationships between multiple variables, making it particularly effective for testing mediation effects and validating theoretical models in behavioural and management research.

The dependent variable (X) in this study is sustainable performance (SP), which refers to three main dimensions based on Mousa & Othman (2020): environmental performance (X1), social performance (X2), and economic performance (X3). Under this variable, these dimensions are measured through 16 indicator items.

The independent variable (Y) in this study is green human resource management (GHRM), measured using three main dimensions based on the AMO theory (Renwick et al., 2013; Singh et al., 2020): green training (Y1), green assessment and reward (Y2), and green employee involvement (Y3). The green training dimension is measured using six indicators: training on waste management, energy efficiency, and recycling. Green assessment and reward are calculated using four indicators, such as performance evaluation incorporating environmental aspects and providing incentives for employees to achieve ecological goals. Green employee involvement includes five indicators: employee participation in eco-friendly activities, freedom to propose innovative ideas, and managerial support for environmental practices. In total, 15 indicator items are used for this variable.

The mediating variable (Z) in this study is green transformational leadership (GTL), measured using four dimensions based on (Robertson & Barling, 2017): green idealised influence (Z1), green inspirational (Z2), green intellectual stimulus (Z3), and green personal care (Z4). Green idealised influence measures the ideal influence shown by leaders through exemplary environmentally friendly behaviour. Green inspiration assesses the leader's ability to inspire employees to commit to environmental goals. Green intellectual stimulus evaluates the leader's encouragement of employees to think creatively and find innovative solutions related to environmental sustainability. Green personal care measures the leader's attention to the well-being of employees in achieving green objectives.

RESULT AND DISCUSSION

This study was conducted at the GMT Kelang Factory, located in Malang Regency, with a total of 172 respondents who were actively employed during the research period from August to September 2024. Most respondents were male (96,51%) and worked in the production division (86,63%). Regarding age, most respondents were in the 20–29 years range (46,51%), followed by those in the 30–39 years range (35,47%). Regarding the highest level of education, most respondents had completed high school/vocational school (SMA/SMK) education (70,93%). In comparison, the rest had a bachelor's/master's/doctoral degree (16,86%) or had graduated from junior high school (12,21%). In terms of length of employment, the majority had worked for 1–5 years (55,23%), followed by less than 1 year (25,00%) and more than 5 years (19,77%).

Table 1.
Characteristic of respondents

Characteristic	Classification	Frequency	Percentage (%)
Gender	Male	166,00	96,51%
	Female	6,00	3,49%
Age	<20	17,00	9,88%
	20-29	30,00	46,51%
	30-39	61,00	35,47%
	>40	14,00	8,14%
Education	SMP/SLTP	21,00	12,21%
	SMA/SMK/SLTA	122,00	70,93%
	S1/S2/S3	29,00	16,86%
Experience	<1 years	43,00	25,00%
	1-5 years	95,00	55,23%
	>5 years	34,00	19,77%
Division	Financial & Administration	15,00	8,72%
	Business	8,00	4,65%
	Production	149,00	86,63%

Source: Research Data, 2024

The data collected from the questionnaires were tabulated and processed using Microsoft Excel and SmartPLS to support data analysis. Hypothesis testing in this study was conducted using the Partial Least Square (PLS) method. According to (Hair et al., 2017), PLS is an alternative method in Structural Equation Modeling (SEM) based on variance, designed to estimate structural models. This study used SmartPLS version 4.1 software to process the data and test the proposed theoretical model. Data analysis was carried out in two stages: Measurement Model Analysis and Structural Model Analysis.

Measurement model analysis was conducted to test the research instrument's validity and reliability and ensure alignment between the measured variables and latent constructs. (Hair et al., 2017) explain that the measurement model in SEM is used to assess the theoretical relationship between the observed indicators and their constructs. Validity was tested using convergent and discriminant validity, while reliability was measured using Convergent Validity (CV) and Cronbach's Alpha. All variables in the study (SP, GHRM, and GTL) showed factor loading (FL) values more excellent than 0,7, and Average Variance Extracted (AVE) values greater than 0,5, indicating strong validity. Cronbach's Alpha and Composite Reliability (CR) values were also greater than 0,7, reflecting high internal consistency. These results confirm that the measurement model is valid and reliable, providing a solid foundation for further analysis.

Table 2.
Validity and reliability test result

Variable	Dimension	Item	LF	AVE	Cronbach's Alpha	CR	Conclusion
Sustainable Performance	Environmental Performance	Y1.1	0,74	0,54	0,94	0,95	Valid & Reliable
		Y1.2	0,75				
		Y1.3	0,72				
		Y1.4	0,75				
		Y1.5	0,70				
		Y1.6	0,71				
		Y1.7	0,75				
	Social Performance	Y2.1	0,72				
		Y2.2	0,71				
		Y2.3	0,72				
		Y2.4	0,74				
	Economy Performance	Y3.1	0,73				
		Y3.2	0,77				
		Y3.3	0,75				
		Y3.4	0,73				
Green Human Resources Management	Green Training	X1.1	0,72	0,52	0,94	0,94	Valid & Reliable
		X1.2	0,72				
		X1.3	0,72				
		X1.4	0,72				
		X1.5	0,73				
		X1.6	0,73				
	Green Assesment and Reward	X2.1	0,71				
		X2.2	0,70				
		X2.3	0,72				
		X2.4	0,74				
	Green Employee Involvement	X3.1	0,72				
		X3.2	0,73				
		X3.3	0,76				
		X3.4	0,73				
		X3.5	0,70				
Green Transformational Leadership	Green Idealized Influence	Z1	0,91	0,82	0,93	0,95	Valid & Reliable
		Z2	0,91				
	Green Intellectual Stimulus	Z3	0,90				
		Green Personal Care	Z4				

Source: Research Data, 2024

The structural model testing in this study aims to evaluate the relationships between latent variables using the proposed hypotheses. According to (Ghozali, 2021), the inner model in SEM represents the estimated relationships between constructs based on the underlying theory. The evaluation was performed using R-square and Q-square values to assess how independent variables

affect the dependent variables and the predictive relevance of the model. According to (Chin, 1998), the R-square value thresholds are classified into three categories: 0,67 as substantial (good), 0,33 as moderate, and 0,19 as weak. Meanwhile, Q-square can be seen from the blindfolding calculation results in the construct cross-validated redundancy section, where 0,02 indicates small, 0,15 indicates moderate, and 0,35 indicates large.

Table 3.
R-Square and Q-Square test result

Variable	R-Square	Q-Square	Conclusion
Sustainable Performance (SP)	0,72	0,66	Substantial effect
Green Human Resources Management (GHRM)	0,46	0,45	Moderate and large effect
Green Transformational Leadership (GTL)	0,46	0,45	Moderate and large effect

Source: Research Data, 2024

The R-square value indicates that the GTL variable has a value of 0,46, which falls into the moderate category. This suggests that the GHRM variable explains 46,3% of the data variance in the GTL variable, while factors outside this research model influence the remaining 53,7%. The R-square value of 0.72 falls into the substantial category for the SP variable, indicating that GHRM and GTL together explain 71.7% of the variance in SP. The remaining 28.3% is influenced by other factors, such as regulatory changes, market conditions, organisational culture, technological advancements, and external stakeholder pressures, which may also impact sustainable performance.

For predictive validation, the Q-square value is used. The Q-square value for GTL is 0,45, and for SP, it is 0,66, both considered large $>0,35$. This indicates that the research model has good predictive relevance, with the GHRM and GTL variables significantly influencing the SP variable, both directly and through the mediating effect of GTL. Thus, the structural model used has high predictive relevance and can be used to support hypothesis testing in this research.

Path coefficient testing is conducted to determine whether the hypotheses tested in this study can be accepted or rejected. The path coefficient test is performed using bootstrapping in SmartPLS 4.1 with the bootstrapping option set to 5000 samples. After bootstrapping in SmartPLS 4.1, the t-statistic and p-value for each relationship in the model will be obtained. The criteria for accepting or rejecting the hypothesis are as follows: H_a is accepted, and H_0 is rejected when the t-statistic is more significant than 1,96. To accept or reject the hypothesis using probability, H_a is accepted if the p-value is less than 0,05.

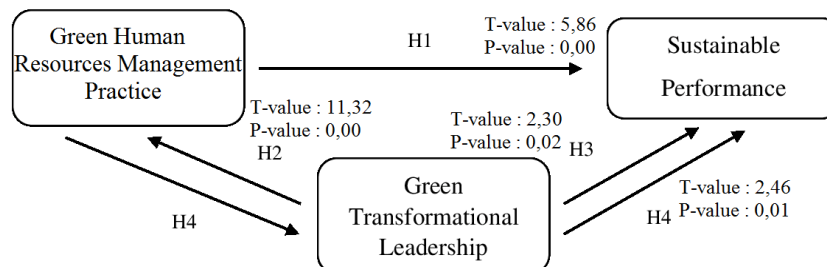
Table 4.
Hypothesis Test Result

Hypothesis	Relation	T-Statistic	P-Value	Conclusion
H1	GHRM – SP	5,86	0,00	Accepted
H2	GTL – GHRM	11,32	0,00	Accepted
H3	GTL – SP	2,30	0,02	Accepted
H4	GHRM – GTL – SP	2,46	0,01	Accepted

Source: Research Data, 2024

The overall results of hypothesis testing for direct effects, as shown in Table 4, indicate significant direct relationships between the variables in hypotheses 1, 2, and 3. The t-values for these relationships are more critical than 1,96, and the p-values are less than 0,005, indicating statistical significance. These findings suggest that although GHRM significantly influences SP, GTL significantly affects both GHRM and SP, as proposed in hypotheses 2 and 3. Hypothesis 4, which uses

mediation, also shows significant results, with t-values greater than 1,96 and p-values less than 0,005, indicating significance. The mediation effect found is partial mediation, as the influence of the GHRM variable on SP remains positively significant. This aligns with existing literature that emphasises the vital role of green transformational leadership in mediating the relationship between GHRM practices and overall sustainable performance.



Source: Research Data, 2024

Figure 2. Result in Hypothesis Test

This study examines the impact of Green Human Resources Management (GHRM) on Sustainable Performance (SP), with Green Transformational Leadership (GTL) as a mediating variable. The results show that GHRM, which includes green training, assessment and reward, and employee involvement, significantly improves the company's sustainability performance, including environmental, social, and economic performance. Furthermore, the study highlights the importance of green transformational leadership in ensuring the effective implementation of GHRM practices to achieve the company's sustainability goals. The Ability-Motivation-Opportunity (AMO) theory explains how GTL supports the development of skills, enhances motivation enhancement, and creates opportunities for employees to engage in green initiatives (Pinzone et al., 2016)—empowering all employees in decision-making for the environment as strategic partners who can learn and improve their competence independently can improve an employee's self-control and problem-solving skills (Ellitan, 2002; Dumont et al., 2017; Govindarajulu & Daily, 2004).

The findings emphasise that GTL encourages adopting environmentally friendly practices and strengthens the relationship between GHRM and SP, enabling companies to optimise sustainability performance through an integrated approach. These findings align with earlier research conducted by Bhatti et al. (2023; Lengyel, 2023; Shaikh, 2021), showing that green transformational leadership plays a significant role in implementing sustainability strategies across various industries.

From a practical perspective, these results provide valuable insights for managers in similar industries, such as PG Kebon Agung, which is actively working toward sustainability. PG Kebon Agung has actively pursued sustainability through various initiatives. Notably, the company has partnered with Sun Energy to implement a 1 MWp solar power plant, aligning with its vision of conducting environmentally conscious business activities (Bisnis.com, 2022). PG Kebon Agung has also implemented Corporate Social Responsibility (CSR) programs, contributing positively to society and the environment (PT Kebon Agung, 2022). These efforts underscore the company's commitment to sustainable practices in the sugar industry.

Managers are encouraged to implement comprehensive green training programs, integrate sustainability-focused leadership development, and establish clear incentives reinforcing environmentally responsible behaviour. By fostering a green transformational leadership style, companies can create a work culture that supports green initiatives and enhances overall sustainability performance. Additionally, regular training for leaders can further strengthen their ability to drive

sustainability-oriented changes, ensuring long-term improvements in environmental, social, and economic performance (Rosyanti et al., 2023).

This study significantly contributes to the literature by emphasising GTL's mediating role and connection to the Resource-Based View (RBV) and AMO theories. These theoretical perspectives suggest that a company's competitive advantage can be achieved by integrating human resources and leadership focusing on sustainability.

CONCLUSION AND SUGGESTIONS

This study aims to evaluate the impact of Green Human Resource Management (GHRM) on Sustainable Performance (SP) and examine the mediating role of Green Transformational Leadership (GTL) in this relationship, particularly in the manufacturing sector at the Tebu Kelang Malang Sugar Factory. The results show that implementing GHRM significantly affects SP, including environmental, social, and economic aspects. GTL plays a crucial role in driving the implementation of both GHRM and SP, with partial mediation since the direct effect of GHRM on SP remains more potent than the indirect effect through GTL. The combination of GHRM and GTL has proven to enhance sustainability performance, such as increased production, compliance with waste regulations, reduced community complaints, and the elimination of fines for liquid waste violations.

This study has several limitations. First, it only measured three elements of GHRM: green training, green assessment and rewards, and green employee involvement, while other components, such as green recruitment and green organisational culture, were not included. Second, the research was limited to respondents from the GMT Kelang Malang Factory, making the findings less representative of the entire manufacturing industry in Malang. Additionally, distributing questionnaires online restricted direct explanations to respondents, which may have affected their understanding of the questions.

Future studies should explore additional GHRM elements, such as green recruitment and organisational culture, and analyse external variables like collaborations with external parties and adopting environmentally friendly technologies. Expanding the research population to other industrial sectors or geographical areas could improve the generalizability of the findings. Employing more varied methodologies, such as in-depth interviews or direct observation, is also recommended to complement quantitative data and produce more comprehensive results.

REFERENCE

- Afrianty, T. W., & Putriwahyuni, S. (2020). Analisis keadilan prosedural dalam penilaian kinerja: perspektif social exchange theory. *E-Jurnal Ekonomi Dan Bisnis Universitas Udayana*, 3, 227. <https://doi.org/10.24843/EEB.2020.v09.i03.p01>
- Alsayegh, M. F., Abdul Rahman, R., & Homayoun, S. (2020). Corporate Economic, Environmental, and Social Sustainability Performance Transformation through ESG Disclosure. *Sustainability*, 12(9), 3910. <https://doi.org/10.3390/su12093910>
- Arshad, M. (2021). The Impact of Green Transformational Leadership on Environmental Performance: Mediating Effect of Green Human Resource Management and Green Innovation. *Journal of Organization and Business*, 1(1), 34–44. Retrieved from <https://journals.ckcpublishing.org/index.php/Job/article/view/15>
- Astuti, M., & Wahyuni, H. C. (2018). Strategi Implementasi Green Human Resource Management Pada Usaha Mikro, Kecil dan Menengah (UMKM). *Matrik: Jurnal Manajemen, Strategi Bisnis Dan Kewirausahaan*, 121. <https://doi.org/10.24843/matrik:jmbk.2018.v12.i02.p04>
- Awwad Al-Shammari, A. S., Alshammrei, S., Nawaz, N., & Tayyab, M. (2022). Green Human Resource Management and Sustainable Performance With the Mediating Role of Green Innovation: A

- Perspective of New Technological Era. *Frontiers in Environmental Science*, 10. <https://doi.org/10.3389/fenvs.2022.901235>
- Bass, B. A. (1990). Bass and Stogdill's handbook of leadership. *New York Free Press*
- Bazhenova, E., Taratukhin, V., & Becker, J. (2012). Information and communication technologies impact business process management on small and medium enterprises in emerging countries. In *CEUR Workshop Proceedings* (Vol. 963, pp. 65–74). CEUR-WS.
- Bhatti, A., Ur Rehman, S., Mirza, F., Nguyen, N. T., Samad, S., & Kamal, I. Z. (2023). Green Intellectual Capital, Green Transformational Leadership, and Sustainable Performance: A Moderated Mediation Model. *World Journal of Science, Technology and Sustainable Development*, 19(2), 85–102. <https://doi.org/10.47556/J.WJSTSD.19.2.2023.2>
- Bisnis.com. (2022). *PG Kebon Agung gandeng Sun Energy manfaatkan PLTS*. Retrieved from <https://surabaya.bisnis.com/read/20220920/532/1579472/pg-kebon-agung-gandeng-sun-energy-manfaatkan-plts>
- Boxall, P., & Steeneveld, M. (1999). Human resource strategy and competitive advantage: A longitudinal study of engineering consultancies. *Journal of Management Studies*, 36(4), 443–463. <https://doi.org/10.1111/1467-6486.00144>
- Buil, I., Martínez, E., & Matute, J. (2019). Transformational leadership and employee performance: The role of identification, engagement and proactive personality. *International Journal of Hospitality Management*, 77, 64–75. <https://doi.org/10.1016/j.ijhm.2018.06.014>
- Burns, J. M. (1978). Leadership New York. NY: *Harper and Row Publishers*.
- Cahyadi, A., Natalisa, D., Poór, J., Perizade, B., & Szabó, K. (2023). Predicting the Relationship between Green Transformational Leadership, Green Human Resource Management Practices, and Employees' Green Behavior. *Administrative Sciences*, 13(1). <https://doi.org/10.3390/admsci13010005>
- Channuntapipat, C. (2021). Can sustainability report assurance be a collaborative process and practice beyond the ritual of verification? *Business Strategy and the Environment*, 30(2), 775–786. <https://doi.org/10.1002/bse.2653>
- Cherian, J. P., & Jacob, J. (2012). A Study of Green HR Practices and Its Effective Implementation in the Organization: A Review. *International Journal of Business and Management*, 7(21). <https://doi.org/10.5539/ijbm.v7n21p25>
- Chin, W. W. (1998). The partial least squares approach to structural equation modelling. In Marcoulides G. A. (Ed.). In *Modern Methods for Business Research* (Vol. 295, pp. 295–336).
- Dewi, N. P. D. P., & Budiasih, I. G. A. N. (2022). Pengaruh Kinerja Lingkungan Pada Pengungkapan Corporate Social Responsibility. *E-Jurnal Ekonomi Dan Bisnis Universitas Udayana*, 11(10), 1192. <https://doi.org/10.24843/EEB.2022.v11.i10.p03>
- Du, Y., & Yan, M. (2022). Green Transformational Leadership and Employees' Taking Charge Behavior: The Mediating Role of Personal Initiative and the Moderating Role of Green Organizational Identity. *International Journal of Environmental Research and Public Health*, 19(7). <https://doi.org/10.3390/ijerph19074172>
- Dumont, J., Shen, J., & Deng, X. (2017). Effects of Green HRM Practices on Employee Workplace Green Behavior: The Role of Psychological Green Climate and Employee Green Values. *Human Resource Management*, 56(4), 613–627. <https://doi.org/10.1002/hrm.21792>
- Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 130–141. <https://doi.org/10.1002/bse.323>
- Elkington, J. (1997). Cannibals with Forks: The triple bottom line of 21st century. *Alternative Management Observatory*, (April), 1–16. Retrieved from http://pdf-release.net/external/242064/pdf-release-dot-net-148_en.pdf
- Ellitan, L. (2002). Praktik-Praktik Pengelolaan Sumber Daya Manusia Dan Keunggulan Kompetitif Berkelanjutan. *Jurnal Manajemen Dan Kewirausahaan*, 4(2), 65–76.
- Elshaer, I. A., Sobaih, A. E. E., Aliedan, M., & Azzaz, A. M. S. (2021). The effect of green human resource management on environmental performance in small tourism enterprises: Mediating role of pro-environmental behaviors. *Sustainability (Switzerland)*, 13(4), 1–17. <https://doi.org/10.3390/su13041956>
- Epstein, M. J., & Buhovac, A. R. (2014). Best Practices in Managing and Measuring Corporate Social, Environmental, and Economic Impacts. Making Sustainability Work Best Practices in Managing and Measuring Corporate Social, Environmental, and Economic Impacts (pp. 1–22).
- Fathussalam, Moch Yusuf, I G Ag Kom Agnam M, Ayuwati, I. D., A. L., D. F., A. L., Y. R., Hiroshi P., G. B., & Asfari, U. (2021). Faktor yang Mempengaruhi Implementasi Green Human Resource Management pada Ormawa: Model Konseptual. *Journal of Advances in Information and Industrial Technology*, 3(1), 11–18. <https://doi.org/10.52435/jaiit.v3i1.86>
- Fhadilah, D. R., & Setyaningrum, R. P. (2023). Pengaruh Transformational Leadership, Green Human Resources Management Terhadap Business Sustainability Dimediasi Innovation Organizational Pada Karyawan

- Generasi Milenial Cafe Atau Restoran Tiara Cibusah Wilayah Kabupaten Bekasi. *Jurnal Ilmiah Wahana Pendidikan*, 9(11), 102–113. Retrieved from <https://doi.org/10.5281/zenodo.8067559>
- George, G., Schillebeeckx, S., & Liak, T. L. (2015). The management of natural resources: An overview and research agenda. *Academy of Management Journal*. Academy of Management. <https://doi.org/10.5465/amj.2015.4006>
- Ghozali, I. (2021). Partial Least Squares, Konsep, Teknik, dan Aplikasi Menggunakan Program SmartPLS 3.2.9 untuk peneliti. *Universitas Diponegoro* (Vol. 3, p. 290). Universitas Diponegoro.
- Goni, K. M., Isa, Y. Z. B. Md., & Abdullah, T. B. (2023). Moderating Role of Green Transformational Leadership on the Relationship between Green Human Resource Practices and Environmental Performance of Hotels in Kano, Nigeria. *Journal of Human Resource and Sustainability Studies*, 11(03), 415–440. <https://doi.org/10.4236/jhrss.2023.113024>
- Govindarajulu, N., & Daily, B. F. (2004). Motivating employees for environmental improvement. *Industrial Management and Data Systems*, 104(3), 364–372. <https://doi.org/10.1108/02635570410530775>
- Hadi, H. K. (2018). Is It True That Transformational Leadership Style Can Shape Employees Motivation and Performance? *JEMA: Jurnal Ilmiah Bidang Akuntansi Dan Manajemen*, 15(2), 40. <https://doi.org/10.31106/jema.v15i2.1022>
- Haffar, M., & Searcy, C. (2017). Classification of Trade-offs Encountered in the Practice of Corporate Sustainability. *Journal of Business Ethics*, 140(3), 495–522. <https://doi.org/10.1007/s10551-015-2678-1>
- Hair, J. F., Tomas, H. G., Ringle, C. M., & Marko, S. (2017). A primer on partial least squares structural equation modeling (PLS-SEM). *International Journal of Research & Method in Education*, 38(2), 1–350.
- Hristov, I., & Chirico, A. (2019). The role of sustainability key performance indicators (KPIs) in implementing sustainable strategies. *Sustainability (Switzerland)*, 11(20). <https://doi.org/10.3390/su11205742>
- Jabbour, C. J. C., Santos, F. C. A., & Nagano, M. S. (2010). Contributions of HRM throughout the stages of environmental management: Methodological triangulation applied to companies in Brazil. *International Journal of Human Resource Management*, 21(7), 1049–1089. <https://doi.org/10.1080/09585191003783512>
- Kemalasari, Y. A., & Wanasiri, Y. (2023). Green Human Resources Management: Peran Green Transformational Leadership dan Karakteristik Kepemimpinan Transformasional dalam Organisasi Pengelolaan Sampah. *Journal of Management and Business Review*, 20(3), 353–363. <https://doi.org/10.34149/jmbr.v20i3.592>
- Khan, M. Y. H. (2018). Strategic Human Resource Practices and its Impact on Performance towards Achieving Organizational Goals. *Business Ethics and Leadership*, 2(2), 66–73. [https://doi.org/10.21272/bel.2\(2\).66-73.2018](https://doi.org/10.21272/bel.2(2).66-73.2018)
- Khan, N. U., Bhatti, M. N., Obaid, A., Sami, A., & Ullah, A. (2020). Do green human resource management practices contribute to sustainable performance in manufacturing industry? *International Journal of Environment and Sustainable Development*, 19(4), 412–432. <https://doi.org/10.1504/IJESD.2020.110647>
- Kholis, A. (2020). Corporate Social Responsibility Konsep dan Implementasi. *Economic & Business Publishing* (p. 176).
- Krishnan, V. R. (2002). Transformational leadership and value system congruence. *International Journal of Value-Based Management*, 15(1), 19–33. Retrieved from <https://sites.google.com/site/venkatkrishnan/home/writings/fulltext/2002ijvb.pdf>
- Lengyel, A. (2023). Spatial perspectives on sustainability priorities: Key stakeholders' insights. *Journal of Cleaner Production*, 420. <https://doi.org/10.1016/j.jclepro.2023.138341>
- Lenka, P., & Kar, S. (2021). Transformational leadership: An approach of business sustainability during the COVID-19 pandemic with special reflection to India. *Problemy Ekorozwoju*, 16(2), 41–50. <https://doi.org/10.35784/pe.2021.2.05>
- Malik, S. Y., Mughal, Y. H., Azam, T., Cao, Y., Wan, Z., Zhu, H., & Thuramy, R. (2021). Corporate social responsibility, green human resources management, and sustainable performance: is organizational citizenship behavior towards environment the missing link? *Sustainability (Switzerland)*, 13(3), 1–24. <https://doi.org/10.3390/su13031044>
- Mansoor, A., Farrukh, M., Lee, J. K., & Jahan, S. (2021). Stimulation of employees' green creativity through green transformational leadership and management initiatives. *Sustainability (Switzerland)*, 13(14). <https://doi.org/10.3390/su13147844>
- Masri, H. A., & Jaaron, A. A. M. (2017). Assessing green human resources management practices in Palestinian manufacturing context: An empirical study. *Journal of Cleaner Production*, 143, 474–489. <https://doi.org/10.1016/j.jclepro.2016.12.087>

- Mousa, S. K., & Othman, M. (2020). The impact of green human resource management practices on sustainable performance in healthcare organisations: A conceptual framework. *Journal of Cleaner Production*, 243. <https://doi.org/10.1016/j.jclepro.2019.118595>
- Muchtadin, M. (2022). The Relationship between Green Human Resource Management and Sustainable Performance: A Literature Review. Hubungan Manajemen Sumber Daya Manusia Hijau dan Kinerja Berkelanjutan: Tinjauan Literatur. *Jurnal Doktor Manajemen (JDM)*, 5(1), 54. <https://doi.org/10.22441/jdm.v5i1.14786>
- Nawangsari, L. C., & Yanti. (2019). Pengaruh Green Transformational Leadership dan Green Training Terhadap Sustainable Corporate Performance Melalui Employee Green Behaviour : Pendekatan Konsep. *Seminar Nasional Peningkatan Mutu Perguruan Tinggi*, 219–226. Retrieved from <https://publikasi.mercubuana.ac.id/index.php/snpmp/article/view/7963>
- Nguyen, V. I. (2023). Increasing Sustainable Performance Through Green Human Resource Management: The Role of Green Supply Chain Management and Corporate Social Responsibility. *Marketing and Management of Innovations*, 14(4), 1–16. <https://doi.org/10.21272/mmi.2023.4-01>
- Noor, J., Tunnufus, Z., Handrian, V. Y., & Yumhi, Y. (2023). Green human resources management practices, leadership style and employee engagement: Green banking context. *Heliyon*, 9(12). <https://doi.org/10.1016/j.heliyon.2023.e22473>
- Patagonia. (2021). *Environmental and social responsibility report*. Patagonia. <https://www.patagonia.com>
- Pinzone, M., Guerci, M., Lettieri, E., & Redman, T. (2016). Progressing in the change journey towards sustainability in healthcare: The role of “Green” HRM. *Journal of Cleaner Production*, 122, 201–211. <https://doi.org/10.1016/j.jclepro.2016.02.031>
- PT Kebon Agung. (2022). *Corporate Social Responsibility (CSR)*. Retrieved from <https://ptkebonagung.com/csr>
- Purwaningsih, N., Tarto, T., & Candraningsih, E. O. (2023). Pengaruh Green Training, Green Recruitment dan Green Transformational Leadership Terhadap Sustainable Corporate Performance PT ABC di Tangerang. *Dynamic Management Journal*, 7(1), 114. <https://doi.org/10.31000/dmj.v7i1.7660>
- Renwick, D. W. S., Redman, T., & Maguire, S. (2008). Green HRM: A review, process model, and research agenda (University of Sheffield Management School White Discussion Paper No. 2008.01). University of Sheffield Management School. <https://doi.org/10.13140/RG.2.2.30801.07520>
- Renwick, D. W. S., Redman, T., & Maguire, S. (2013). Green Human Resource Management: A Review and Research Agenda*. *International Journal of Management Reviews*, 15(1), 1–14. <https://doi.org/10.1111/j.1468-2370.2011.00328.x>
- Robertson, J. L., & Barling, J. (2017). Toward a new measure of organizational environmental citizenship behavior. *Journal of Business Research*, 75, 57–66. <https://doi.org/10.1016/j.jbusres.2017.02.007>
- Rosati, F., & Faria, L. G. D. (2019). Addressing the SDGs in sustainability reports: The relationship with institutional factors. *Journal of Cleaner Production*, 215, 1312–1326. <https://doi.org/10.1016/j.jclepro.2018.12.107>
- Rosyanti, D. M., Khoirotunnisa, F., & Dewanti, M. C. (2023). The Effect of Green Culture and Employee Motivation on Green Workplace Practice in the Food and Beverage Industry in Indonesia. *Jurnal Aplikasi Manajemen*, 21(1). <https://doi.org/10.21776/ub.jam.2023.021.1.05>
- Setyaningrum, R. P., & Wulandari, A. (2024). Green Human Resources Management, Green Environmental: Influence on Sustainability Performance Mediated by Digital Metaverse Technology in the Industry 4.0 Era (pp. 809–818). https://doi.org/10.2991/978-2-38476-118-0_93
- Shaikh, I. (2021). Environmental, Social, and Governance (ESG) Practice and Firm Performance: an International Evidence. *Journal of Business Economics and Management*, 23(1), 218–237. <https://doi.org/10.3846/jbem.2022.16202>
- Singh, S. K., Giudice, M. D., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technological Forecasting and Social Change*, 150. <https://doi.org/10.1016/j.techfore.2019.119762>
- Sulistiawan, J., Herachwati, N. and Khansa, E.J.R. (2024). Barriers in adopting green human resource management under uncertainty: the case of Indonesia banking industry, *Journal of Work-Applied Management*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JWAM-06-2024-0064>
- Tanova, C., & Bayighomog, S. W. (2022). Green human resource management in service industries: the construct, antecedents, consequences, and outlook. *Service Industries Journal*, 42(5–6), 412–452. <https://doi.org/10.1080/02642069.2022.2045279>
- Unilever. (2021). *Sustainable Living Plan progress report*. Unilever. <https://www.unilever.com>
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171–180. <https://doi.org/10.1002/smj.4250050207>
- Widisatria, D., & Nawangsari, L. C. (2021). The Influence of Green Transformational Leadership and Motivation to Sustainable Corporate Performance with Organizational Citizenship Behavior for the

- Environment as a Mediating: Case Study at PT Karya Mandiri Sukses Sentosa. *European Journal of Business and Management Research*, 6(3), 118–123. <https://doi.org/10.24018/ejbmr.2021.6.3.876>
- Yafi, E., Tehseen, S., & Haider, S. A. (2021). Impact of Green Training on Environmental Performance through Mediating Role of Competencies and Motivation. *Sustainability*, 13(10), 5624. <https://doi.org/10.3390/su13105624>
- Yong, J. Y., Yusliza, M. Y., Ramayah, T., Chiappetta Jabbour, C. J., Sehnem, S., & Mani, V. (2020). Pathways towards sustainability in manufacturing organizations: Empirical evidence on the role of green human resource management. *Business Strategy and the Environment*, 29(1), 212–228. <https://doi.org/10.1002/bse.2359>
- Yusoff, Y. M., Nejati, M., Kee, D. M. H., & Amran, A. (2020). Linking Green Human Resource Management Practices to Environmental Performance in Hotel Industry. *Global Business Review*, 21(3), 663–680. <https://doi.org/10.1177/0972150918779294>
- 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 Istrazivanja*, 35(1), 6121–6141. <https://doi.org/10.1080/1331677X.2022.2047086>