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Article

Enhancing the circular economy business model towards sustainable business performance: Moderating the role of environmental dynamism

I Wayan Edi Arsawan[1,*], Dwi Suhartanto[2], Viktor Koval[3], Iryna Tralo[4], Vladyslav Demenko[5], Amiril Azizah[6]

[1] Department of Business Administration, Politeknik Negeri Bali, Tuban 80364, Indonesia
[2] Department of Business Administration, Politeknik Negeri Bandung, Bandung 80364, Indonesia
[3] Department of Business and Tourism Management, Ismail State University, 68600 Izmail, Ukraine
[4] Department of Management, Rivne State University of Humanities, 33003 Rivne, Ukraine
[5] Department of Management and Administration, Interregional Academy of Personnel Management, 03039 Kyiv, Ukraine
[6] Department of Business Administration, Politeknik Negeri Samarinda, Samarinda 80364, Indonesia
*** Corresponding author:** I Wayan Edi Arsawan, wayanediarsawan@pnb.ac.id

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Abstract: Enhancing the emphasis on incorporating sustainable practices reinforces a linear transition towards a circular economy by organizations. Nevertheless, although studies on circular economy demonstrate an increasing trend, the drivers that support circular economy practices towards sustainable business performance in the Small and Medium-Sized Enterprise (SME) sector, especially in developing nations, demand exploration. Accordingly, the study examines circular economy drivers, i.e., green human resource management, in establishing sustainability performance and environmental dynamism as moderating variables. The study engaged 207 SMEs and 621 respondents who were analyzed utilizing structural equation modeling. The analysis indicated that sustainable business performance was affected by green human resource management and a circular economy. Subsequently, the circular economy mediated the linkage between green human resources management and sustainable business performance. The environmental dynamism moderated the linkage between green human resources management and the circular economy.

Keywords: green human resource management; circular economy; sustainable business performance; SMEs

1. Introduction

There is a noticeable prevalent concern about ecological problems resulting from human activities, prompting all organizations to set ecological protection as a prevailing priority. Consequently, they are intensifying the investment in integrating sustainable practices to facilitate the linear transformation to a circular economy (Castro-Lopez et al., 2023; Khan et al., 2023). A circular economy is a system engineered to supersede the conception of "end-of-life" by reducing, reusing, recycling, and restoring items in manufacturing, circulation, and utilization procedures (Arsawan et al., 2023; Koval, Arsawan et al., 2023). The principal goal of the circular economy is to actualize sustainable development by fostering an excellent environment, enhancing economic advantage and public equity for present and upcoming generations (Cheffi et al., 2023; Ren and Albrecht, 2023; Kharazishvili et al., 2023). The circular economy earns significant recognition in many areas of business and management studies, including strategic management (Durán-Romero et al., 2020), sustainability (Koval, Kryshtal et al., 2023; Le et al., 2022), supply chain

management (Alkhuzaim et al., 2021; Centobelli et al., 2021), and economy (Arsawan et al., 2023; Ren and Albrecht, 2023). The current study of the circular economy associated with the management field, especially green human resources management, continues to escalate (Jabbour et al., 2020). Simultaneously, researchers (Diaz et al., 2021; Obeidat et al., 2023) endorse this trend by highlighting the focus on enhancing sustainable business performance by the enforcement of green management to stimulate the alteration to a circular economy for the paramount objective of enhancing sustainable business performance (Barros et al., 2021; Le et al., 2022). Green human resources management benefitted significantly to the organization by increasing employee engagement in ecological management, building ecologically friendly attitudes and behaviors, and elevating environmental awareness (Ahmed et al., 2021; Darvishmotevali and Altinay, 2022). Accordingly, recruiting ecologically oriented employees will help accelerate a business's transition to circular and sustainable business performance.

Subsequently, sustainable business performance is perceived as an essential measure of organizational performance, and the eventual objective is to establish a competitive advantage by incorporating three dimensions, i.e., environmental, social, and economic (Khan et al., 2023; Obeidat et al., 2023). The ecological dimension encompasses an organization's responsibility to create a cleaner and greener planet (Yadegaridehkordi et al., 2023). The social dimension entails a series of organizational initiatives to foster community welfare (Obeidat et al., 2023). Ultimately, the economic dimension reviews the organization's pursuits of profit maximization by allocating minimum raw material utilization, reducing production costs, and managing inventory (Arsawan et al., 2023). A current study (Obeidat et al., 2023) proposes a framework that integrates the green human resources management framework with circular economy business model as an endeavor for sustainability performance. The framework highlights the significance of incorporating green human resources management in establishing ecologically friendly strategies that facilitate circular economy practices (Stupnytskyi et al., 2023). Moreover, this framework presents an opportunity to promote sustainable business performance (Muisyo et al., 2022). Besides, green human resources management is perceived as significantly stimulating organizational transformation in the circular economy. Accordingly, further research is crucial to advance the insights on how green human resources management encourages circular economy transition and integrates the two concepts to drive organizational sustainability performance (Obeidat et al., 2023). While studies on circular economy demonstrate an ascending trend (Cheffi et al., 2023; De Pascale et al., 2021; Neri et al., 2023; Ren and Albrecht, 2023), the linkage between green human resources management in supporting circular economy practices is worth exploring (Obeidat et al., 2023). Drawing from the scientific literature, the present study should concentrate on the green human resources management—circular economy business model—sustainable business performance linkage, notably for developing nations. Accordingly, the study is intended to respond to the knowledge gaps.

The study bridges four subsequent research gaps. First, this is one among only a few scientific studies to investigate specifically the proposed linkage between green human resources management and circular economy. While previous studies scientifically endorse this linkage (Marrucci et al., 2021; Pham et al., 2020), there is

an ongoing interest in investigating the potential linkage between green human resources management and the circular economy. Besides, the study aims to examine further the plausible linkage across different sectors (Obeidat et al., 2023). Accordingly, the study complies by initiating a model of the linkage and scientifically testing it in the Small and Medium-Sized Enterprise (SME) sector.

Second, the study exposes how the circular economy mediates the linkage between green human resources management and sustainable business performance. It is accomplished because adopting ecological management systems (including green human resources management) can establish circular economy models. A series of organizational procedures to enhance circularity requires structured initiatives to reduce resource utilization (Ren and Albrecht, 2023), boost recycling value (Lee et al., 2021), lower emission levels (Centobelli et al., 2021), and upgrade product durability value (Diaz et al., 2021). The requirements will be fulfilled by incorporating a comprehensive ecological management system. Accordingly, all green human resources management functions, including green recruitment and selection, green training, green performance management, and green compensation, are applied to accomplish the organization's ecological strategic objectives (Muisyo et al., 2022). Moreover, organizational sustainability driven by green human resources management practices yields effective circular economy implementation (Pieroni et al., 2021). Thus, by following this approach, we contribute new insights to the relevant scholarly literature, practitioners, and policymakers.

Third, the study's implications to the knowledge in the green human resources management and circular economy field by resolving the gaps of previous studies, i.e., the insufficient studies on circular economy and green human resources management in the ASEAN region as a developing nation setting. Specifically, the study extends and explicates a systematic linkage model between green human resources management and circular economy, drawing on the framework elaborated by previous researchers (Obeidat et al., 2023). Consequently, the study's findings envision the literature diversifying and upgrading the generalization of the convergence between green human resources management, circular economy, and sustainable business performance of SMEs in developing nations, such as Indonesia.

The fourth gap, the coverage of the study, is not restricted to the linkage between green human resources management and circular economy but is extended by including environmental dynamism that moderates the linkage between green human resources management and circular economy under three principal considerations. First, environmental dynamism is influenced by market volatility, competitive intensity, and technological volatility in the realization of circular economy practices (Castro-Lopez et al., 2023). The literature demonstrates that environmental dynamism is an external driver for circular economy adoption that remains understudied (Bag et al., 2021). Second, given the complexity of changing strategic and operating approaches towards circularity, internal resistance may hinder circular economy integration in organizations (Santa-Maria et al., 2022). Consequently, employees who thoroughly comprehend the significance of circular economy adoption are essential to promoting the practice of circular economy. Given limited resources and the urgency to respond to ecological dynamics (Arsawan et al., 2023), it is imperative to investigate how SMEs conduct circular economy without fundamentally changing the

organization's strategic positioning on circularity (Kumar and Bhatia, 2021). Therefore, the aim of this study is to answer three research questions:

RQ1—Are green human resource management and circular economy effective in building sustainable business performance in SMEs?

RQ2—Does the circular economy mediate the relationship between green human resource management and sustainable business performance?

RQ3—Does environmental dynamism act as a moderating variable in the relationship between green human resource management and circular economy?

2. Review of literature and hypotheses development

2.1. Natural resource-based view (NRBV)

The NRBV is an extension of the RBV due to the growing awareness of protecting nature among scholars and practitioners. It promotes the raising of ecological consciousness by building strategic plans that implicate the efficient utilization of resources and energy and prolong the product life cycle (S. Hart and Dowell, 2011). This theory proposes three crucial concepts in ecological protection and preservation (S. Hart, 1995). First, it is pollution prevention by reducing waste, emissions, and waste. In this regard, industrial dumping becomes fruitful to be transformed and refined (Yadav et al., 2020), reused, and recycled efficiently (Bag et al., 2021). Therefore, it can be converted into ecological value-added products (Schröder et al., 2020). The second is product stewardship, by ensuring that the life cycle cost of the product is minimized. It is accomplished by integrating eco-design with product development (Dalhammar et al., 2021). By combining ecological impacts, eco-design is a promising strategy to achieve eco-efficiency (Polverini, 2021). Third, it is easing the ecological burden in organizational growth by sustainable development. It can be realized by devising a plan to mitigate the growing issues to acquire more excellent value (Jain et al., 2022). Scholars note that studies focused exclusively on pollutant preventability, while the rest remain relatively underexplored in scientific studies (Arsawan et al., 2023; Centobelli et al., 2021). Subsequently, the study examines the role of NRBV in these three capabilities. First, green human resources management initiates prevention by equipping employees with environmental awareness (Muisyo et al., 2022). Second, the circular economy establishes ecologically safe products and life cycle approaches centered on product operation practices (Green et al., 2015). Third, sustainable business performance is the realization of sustainable development (Gupta et al., 2021; Jabbour et al., 2020).

2.2. Green human resources management and the circular economy

The scientific literature highlights how green human resources management enables organizations to establish sustainability-oriented strategic policies. Green human resources management are policies and practices that prevent damage from organizational activities (Yong et al., 2019; Yusoff et al., 2018). Furthermore, green human resource management is considered a holistic management approach in strengthening the understanding of employees and organizations to be responsible for environmental policy (Pham et al., 2020). The fundamental practices of green human

resources management are perceived as relevant approaches, policies, methods, and strategies to facilitate employees' green behavior (Tang et al., 2018), promote an ecologically friendly work environment, preserve resources, and ensure social responsibility (Rubel et al., 2021). With a supportive focus on policy enforcement in the form of sourcing, green training is intended to promote employee awareness of the vital role of ecological stewardship, engagement, and performance (Haldorai et al., 2022; Koval, Mikhno, et al. 2023). Previous studies (Nisar et al., 2021) describe green human resources management as the optimal approach in formulating and enforcing pro-environment-oriented programs, preservation programs (Zhu et al., 2021), and problem-solving skills around ecological issues (Haldorai et al., 2022).

Green human resources management remains understudied despite pro-ecological policies derived from employees with ecologically friendly characters, attitudes, and knowledge (Pham et al., 2020). Accordingly, incorporating green human resources management will encourage employees to be involved in sustainability practices in alignment with the sustainability objectives (Jabbour et al., 2020). Ultimately, they have ecological legitimacy due to their sensitivity and awareness in formulating ecological preservation policies (Baah et al., 2021; Soewarno et al., 2019). Ecological legitimacy is a state in which the environmental values espoused by an organization are aligned with a larger social value system (Polverini, 2021). The latest study (Obeidat et al., 2023) identifies the pivotal role of green human resources management practices in accomplishing circular economy initiatives. For example, integrating pro-ecological capabilities into employee hiring, training, and compensation requirements will contribute to enhancing ecologically oriented behaviors in the workplace (Darvishmotevali and Altinay, 2022). With the knowledge and capability, employees contribute to reducing raw material utilization, minimizing waste, reusing, optimizing resource utilization, and redesigning ecologically friendly internal processes (Obeidat et al., 2023). These are the principal requirements to achieve a circular economy. Subsequently, the formulated hypothesis is:

H1. There is a significantly positive linkage between green human resources management practices and the circular economy.

2.3. Circular economy and sustainable business performance

The knowledge of the circular economy to positively affect sustainable business performance has been scrutinized in the literature (Barros et al., 2021; Gupta et al., 2021). Circular economy initiatives significantly impact sustainable business performance (Jabbour et al., 2020) through efficient utilization of resources (Pieroni et al., 2021) and manufacturing products with ecologically friendly design and promotion (Arsawan et al., 2023; Whicher et al., 2018). Sustainable business performance is classified into ecological, social, and economic performance. In the economic context, circular economy facilitates the optimization of financial resources (Arsawan et al., 2023), minimizes operational constraints, and elevates economic profits (Geissdoerfer et al., 2020). Economic performance and the circular economy are attributed to its capability to minimize material purchase expenditures, pollutants, energy conversions, and ecological harms and collisions (Yildiz Çankaya and Sezen, 2019).

Further, Le et al. (2022) assert that features of the circular economy are associated with an organization's economic performance. From an environmental performance perspective, the scientific literature reveals that circular economy generates considerably fewer ecological emissions (Yadegaridehkordi et al., 2023) and reduces resource consumption (Feng et al., 2018). Moreover, organizations that incorporate circular economy business model contribute to reducing raw material utilization (Marrucci et al., 2022) and energy consumption expenses (Arsawan et al., 2023), promoting recycling, reuse, and product improvement (Barros et al., 2021; De Angelis et al., 2023). Existing literature explain circular economy business model is an idea that encourages sustainable development based on the 3R principles, namely, reduce, reuse and recycle (Arsawan et al., 2023). Considered the opposite of linear economics, the circular economy concept transforms to maximize value at each stage of the product thereby providing overall benefits (Castro-Lopez et al., 2023).

Further, recent studies (AL-Khatib, 2023; Khan et al., 2023) indicate that technological developments lead to the significance of circular economy enforcement by creating resource preservations and externalities, including health issues from air pollution (Suhartanto et al., 2022). Therefore, it infers that circular economy realizations enhance an organization's environmental performance. Subsequently, to increase value, organizations should consider economic benefits and social responsibility in ensuring sustainability. The social performance dimension is studied within corporate investment in social projects (Gras and Krause, 2018), upgrading occupational health and safety (Saeidi et al., 2015), and enhancing reputation and image among stakeholders (Yadegaridehkordi et al., 2023). These researchers infer that green practices and circular economy positively enhance the perception of social performance by stakeholders (Nassani et al., 2022; Zhang et al., 2022). Hence, the positive linkage yields more efficient resource utilization strategies (Pieroni et al., 2019). Therefore, the subsequent hypothesis is:

H2. There is a significantly positive linkage between circular economy practices and sustainability performance.

2.4. Green human resources management and sustainable business performance

The literature on green human resources management emerges as an inventive strategy for promoting environmental awareness (Haldorai et al., 2022; Irani et al., 2022; Obeidat et al., 2023), i.e., strengthening green commitment (Yong et al., 2019) and fostering the workplace with pro-ecological engagement (Irani et al., 2022). green human resources management establishes an ecologically friendly ecosystem within the workplace through green recruitment and selection, green training, green performance management, and green compensation (Yong et al., 2019). From a sustainability perspective, green human resources management is viewed as a pro-ecological practice that facilitates the continuous accomplishment of the organization's ecological goals (Irani et al., 2022; Tang et al., 2018). Previous studies on green human resources management strategies concentrate on organizational and environmental performance effects. Meanwhile, other researchers focus on human resource practices that stimulate commitment and ecologically friendly behavior

(Shoaib et al., 2021). Green human resources management comprises a range of practices that strengthen commitment, sensitivity, and orientation toward the environment (Arsawan et al., 2023; Saleem et al., 2021). Scientific studies report a significant linkage between green human resources management and organizational performance and competitiveness (Muisyo et al., 2022; Obeidat et al., 2023). Notably, the analysis performed by Marrucci et al. (2021) infers that green human resources management enforcement positively affects all performance dimensions, i.e., environmental, social, and economic. Scientific studies also report correlations between human resource practices and ecological and financial performance (Haldorai et al., 2022; Irani et al., 2022; Nisar et al., 2021; Zhu et al., 2021). Similarly, other researchers (Shoaib et al., 2021; Yusoff et al., 2018) highlight how green human resources management practices shape employees' knowledge (Kim et al., 2019), behavior, and commitment to implementing green initiatives (Obeidat et al., 2023). Consequently, green human resources management sustains the business, the society, the native environment, and the economy holistically. Accordingly, the proposed hypothesis is:

H3. Green human resources management has a significantly positive influence on sustainable business performance.

2.5. Mediating the role of circular economy

The scientific literature exposes that green human resources management prepares organizations to establish strategic pro-ecological policies that center on preventing damage that emerges from organizational activities (Yong et al., 2019; Yusoff et al., 2018) while simultaneously encouraging employees to involve in green behaviors (Tang et al., 2018) by fostering an ecologically friendly work environment, preserving resources and being socially responsible (Rubel et al., 2021). By concentrating on policy enforcement in recruitment, green training is envisioned to elevate employees' awareness of the significance of protecting the environment (Haldorai et al., 2022). Accordingly, green human resources management is an excellent approach to articulating and incorporating pro-environment-oriented programs, preservation programs (Zhu et al., 2021), and problem-solving skills related to ecological issues (Haldorai et al., 2022).

Circular economy initiatives significantly impact sustainable business performance (Jabbour et al., 2020) through the efficiency of resource utilization (Pieroni et al., 2021), eco-friendly product design (Arsawan et al., 2023; Whicher et al., 2018), decreasing ecological emissions (Yadegaridehkordi et al., 2023), resources consumption, raw items, and energy (Feng et al., 2018). Moreover, circular economy promotes the reduction of raw material utilization (Marrucci et al., 2022) and energy consumption expenses (Arsawan et al., 2023), encourages recycling, reuse, and product improvement (Barros et al., 2021; De Angelis et al., 2023). Accordingly, it implies that circular economy practices promote an organization's environmental performance (AL-Khatib, 2023; Khan et al., 2023). This finding is endorsed by Jabbour et al., (2020), that circular economy stimulates organizations and stakeholders to be involved in sustainability enforcement. Furthermore, circular economy positively impacts organizational sustainability by encouraging sustainable-oriented

innovation (Koval et al., 2023), utilization of clean technology (Chiaroni et al., 2020), and allocating resources efficiently (Marrucci et al., 2022; Pieroni et al., 2021). Subsequently, environmental awareness supported by green human resources management generates effective circular economy mechanisms that ultimately foster organizational sustainability patterns (Pham et al., 2020). Consequently, the circular economy in organizations serves as a mediator by which green human resources management practices influence sustainability performance. Subsequently, the formulated hypothesis is:

H4. The circular economy mediates the linkage between green human resources management and sustainable business performance.

2.6. Moderating role of environmental dynamism

In order to grow sustainably, organizations require sensitivity to capitalize on opportunities to develop and configure strategic plans and decisions to advance competitiveness (Harsch and Festing, 2020; Permatasari et al., 2022). Consequently, configuring environmental dynamism allows organizations to reduce market turbulence, competitive intensity, and technological turbulence in adopting circular economy practices (Castro-Lopez et al., 2023). In this perspective, environmental dynamism is an external driver for circular economy promotion but remains understudied (Bag et al., 2021). Moreover, the strategic approach should be adjusted accordingly due to the complexity of transforming strategic and operation systems towards circularity; internal resistance may hinder the enforcement of circular economy in organizations (Santa-Maria et al., 2022). Therefore, employees who thoroughly grasp the significance of circular economy adoption are crucial to promoting the practice of circular economy. Given the urgency to respond to environmental dynamism (Arsawan et al., 2023), organizations are required to enhance how green human resources management influences employees' knowledge, behavior, and commitment to performing green initiatives (Haldorai et al., 2022; Irani et al., 2022; Obeidat et al., 2023). Accordingly, environmental dynamism will facilitate green human resources management in enhancing circular economy initiatives by promoting stimulation, which ultimately encourages the organization to upgrade its strategic pattern towards circularity (Sundar et al., 2023).

H5. Environmental dynamism moderates the linkage between green human resources management and circular economy.

The study examines the linkage between circular economy drivers and sustainable business performance and environmental dynamism as a moderating variable. **Figure 1** portrays the conceptual framework.

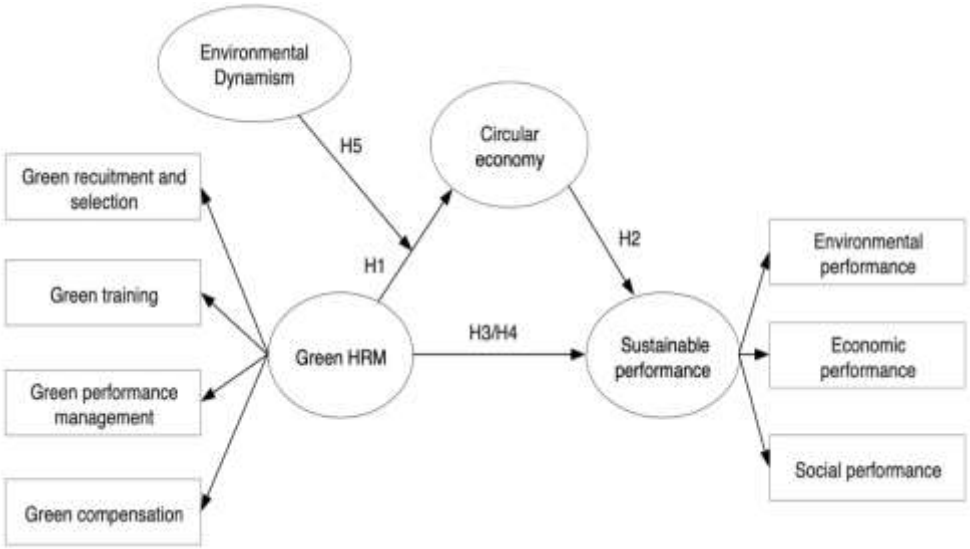

Figure 1. Conceptual framework.

3. Methodology

The quantitative approach was adapted to verify the hypothetical framework or examine the linkage between constructs (Arsawan et al., 2023) by conducting surveys, statistics, and structural modeling (Appolloni et al., 2022). This method was utilized comprehensively in the social sciences; however, to test accuracy and sustainability it is necessary to provide an accurate analysis (Sovacool et al., 2018). Accordingly, consistent with the objectives, this approach was considered appropriate to verify hypotheses under structural equations. Structural modeling was considered a suitable analysis approach for this study because the analysis results depend on the acceptance or rejection of the proposed framework. The framework presented in the conceptual model represents the hypothesized relationships. In addition, structural models are considered more practical and rigorous compared to traditional testing, because analytical performance will measure the direct and indirect impacts of exogenous constructs and endogenous constructs (Appolloni et al., 2022).

3.1. Data and sampling

The data was centered on the involvement of producer organizations in the SMEs with 50–250 employees since this segment was perceived as the economic foundation of Indonesia (Arsawan et al., 2023). First, SMEs are growing rapidly with a total of 64.5 million units which have the potential to become the backbone of the economy. This indicates the enormous potential that needs to be utilized as a force that builds the Indonesian economy apart from the non-oil and gas sector. Second, wood craft SMEs need to increase their contribution to saving the environment by orienting towards sustainable innovation both at the employee and organizational levels considering the large need for raw materials. Third, wood craft SMEs need to prepare a strategic plan regarding waste management to preserve the environment. By applying circular economy principles (reduce, reuse and recycle), various production waste can be minimized and become new products with added environmental and economic value.

For the preliminary sample, the directory of the Bali Province government, Indonesia, was scrutinized to recognize targeted SMEs, resulting in 450 woodcraft SMEs as the population (Arsawan et al., 2022). Further, the selection of the sample frame was undertaken through a simple random sampling method, i.e., a lottery method without replacement. It implied that they received a single chance equally to be involved. The sample frames were determined using the (Krejcie and Morgan, 1970) formula, yielding 207 SMEs to fill out the questionnaire. The respondents comprised managers, assistant managers, and key employees. The selection of these three levels of management was expected to provide a holistic perspective that green human resource management is an important trigger in implementing a circular economy which has an impact on sustainability values. These three levels of management provide a view of the three elements that research variables have an important impact on saving the environment towards organizational performance and identity. They were ideal respondent, given their strategic view of the organization's characteristics relating to organizational practices associated with the circular economy and organizational sustainability. Further, to collect data, we carried out several stages. First, we identified wood craft SMEs from the provincial data base and asked for their addresses, telephone numbers and emails. Second, we send official letters (emails and in-person visits) to get a good response rate. Third, we distribute emails and give reminders every two weeks. The platforms used are email, WhatsApp and Google Forms

Data were obtained over five months, March to July 2023 with the following considerations. First, the samples were spread across 9 districts with relatively long geographical distances, thus requiring a relatively large research team composition and a long time. Second, considering the relatively large sample frame and respondents, we need money and time to continue communicating, especially via telephone and direct visits. Third, wood craft SMEs need time to respond to the research team's request to participate because they are focused on post-pandemic recovery. Ultimately, we obtained 621 feedbacks to answer the objectives of the study.

3.2. Measurements

The extent of the utilized construct was established in previous scientific studies. The construct indicators were measured following a five-point Likert scale, "1: strongly disagree" to "5: strongly agree". To prevent ambiguity, the questionnaire, translated into Bahasa Indonesia, was piloted on 30 SME managers knowledgeable about the sustainable business performance model. The measurement of the green human resources management construct was the second order of green recruitment and selection, green training, green performance management, and green compensation. The results do not require significant adjustments to test the validity and reliability of the construct. Green human resources management scale items were modified from (Haldorai et al., 2022; Jabbour, 2011; Obeidat et al., 2023). The measurement of the circular economy variable was modified from scale items by Obeidat et al. (2023). Specifically, ten items were utilized for the circular economy measurement. Respondents scrutinized the designated statements using their insights to evaluate the enforcement level of the circular economy model. The measurement of

sustainable business performance variable was a second-order approach through three main dimensions, i.e., environmental, social, and economic performance. The measurement is adopted from previous studies (Obeidat et al., 2023; Yildiz Çankaya and Sezen, 2019). Further, measuring the environmental dynamism variable was five indicators adapted from the scientific literature (Chan et al., 2016; Kumar and Bhatia, 2021; Li et al., 2020). Subsequently, the study utilized the (PLS-SEM) approach with SmartPLS 3.2.9 software to examine the linkage between constructs along with the predictive power of endogenous variables (Amankwaa et al., 2019). The study confirmed the sustainable business performance model in the SME sector. Since the study attested the sustainable business performance model and the data were not distributed normally, assessing the sustainable business performance model associated with the green human resources management and circular economy predictors utilizing SEM-PLS was applicable (Hair Jr et al., 2017).

4. Results

The study comprised 621 respondents from 207 woodcraft SMEs engaged in circular economy practices to establish sustainable business performance. The respondents were in the highly productive age, with the highest being 31–35 (26.57%). Subsequently, most respondents completed university, an essential pillar for developing pro-ecological strategies with high-quality knowledge (Ling and Xu, 2021; Rubel et al., 2021). Respondents' profile is presented in **Table 1**.

Table 1. Respondents' profile.

Description		Frequency	Percentage (%)
Age	<25	91	14.65
	25–30	139	22.38
	31–35	165	26.57
	36–40	121	19.48
	41–45	105	16.91
Gender	Male	423	68.12
	Female	198	31.88
Education	Bachelor	461	74.24
	Master	139	22.38
	Doctor	21	03.38
Experiences	<5	132	21.26
	6–10	211	33.98
	11–15	176	28.34
	16–20	102	16.43

4.1. Outer model measurement

Table 2 demonstrated that overall indicators possessed loading factor values exceeding 0.7. Moreover, the composite reliability value exceeded 0.7. Further, the Average Variance Extracted (AVE) value exceeded the advised level of 0.5. Then, data analysis established that the square root value of the AVE exceeded the construct

correlation value, verifying that the discriminant validity requirements were fulfilled. The validity requirements denoted by these indicators, including construct reliability, were fulfilled (Hair Jr et al., 2017). Subsequently, the Variance Inflation Factor (VIF) values were between 1000–3301 (lesser than the advised level of 5), suggesting that the data were free from problems concerning common-method variance (Hair et al., 2019; Hair Jr et al., 2017).

Table 2. Measurement model.

Constructs	Loading	CA	CR	AVE
Green human resource management		0.955	0.959	0.612
Green recruitment and selection		0.900	0.930	0.769
1. Considering ecological concerns	0.778			
2. Focusing on ecological insights	0.774			
3. Conducting rigorous recruiting	0.814			
4. Conducting well-designed interviews	0.814			
Green training and development		0.899	0.925	0.712
1. Conducting ecological training for employees	0.755			
2. Prioritizing of ecological training	0.823			
3. Allowing implementing green knowledge	0.792			
4. Conducting continuous ecological training	0.783			
5. Training is an essential stake	0.788			
Green performance management and appraisal		0.872	0.921	0.796
1. Ecological goals implemented	0.798			
2. Assessing ecological contributions	0.776			
3. Conducting career advancement	0.773			
Green compensation and reward		0.854	0.911	0.774
1. Rewarding ecological programs	0.754			
2. Rewarding achieved ecological goals	0.753			
3. Performing ecological awards	0.757			
Circular economy		0.935	0.944	0.630
1. Encouraging increased production and process efficiency	0.756			
2. Strive for the reducibility of raw items and energy conversion	0.742			
3. Encouraging energy saving and the utilization of sustainable energy	0.791			
4. Redesigning processes aimed at ecological proficiency	0.750			
5. Supporting a life cycle management concept	0.762			
6. Separating and recovering waste/residues	0.815			
7. Restoring, refining, or renewing utilized items or residues	0.846			
8. Teaming up with vendors to create terminated loops, which optimize resource usage and diminish waste	0.817			
9. Teaming up with customers to create terminated loops, which optimize resource usage and diminish waste	0.840			
10. Improving the ecological situation	0.810			

Table 2. (*Continued*).

Constructs	Loading	CA	CR	AVE
Sustainable business performance		0.938	0.946	0.573
Environmental performance		0.860	0.905	0.705
1. Improving the ecological situation	0.716			
2. Reducing waste	0.766			
3. Decreasing air pollution	0.758			
4. Minimizing utilization of harmful materials	0.747			
Economic performance		0.874	0.908	0.664
1. Reducing the materials purchased expenses	0.790			
2. Reducing the energy utilization expenses	0.740			
3. Elevating earnings per share when accomplished	0.751			
4. Elevating in return on investment when accomplished	0.778			
5. Elevating in return on the asset when accomplished	0.761			
Social performance		0.855	0.902	0.697
1. Upgrading public perception in the presence of consumers	0.789			
2. Strengthening investments in social projects	0.780			
3. Strengthening connections with societal stakeholders	0.737			
4. Upgrading the health and welfare of employees	0.721			
Environmental dynamism		0.874	0.906	0.658
1. Intensifying ecological transitions in the market	0.722			
2. Intensifying regular requests for new products	0.789			
3. Intensifying continuous transitions in the market	0.874			
4. Intensifying frequent and significant transitions in government regulations	0.827			
5. Intensifying high rate of innovation in the industry	0.837			

4.2. Inner model measurement

In order to investigate the relevance of indicators and coefficients, the study implemented the 5000-sample bootstrap method (Chin, 2010). First, the model's goodness-of-fit (GoF) was 0.685, which signaled the substantiality of the model's fitness. Thus, the proposed sustainable business performance model benefitted the SME sector. Second, assessment of the standard residual root mean square (SRMR) and normed fit index (NFI) demonstrated that the SRMR had a value of 0.065 and the NFI had a value of 0.688, implying that the fitness of the model (Tenenhaus et al., 2005). Thirdly, the R^2 examination confirmed that green human resources management and circular economy described 0.469 (46.9%) of the variance in sustainable business performance. Eventually, all Q^2 possessed positive values, implying that overall variables come across good predictive relevance (Chin, 2010).

4.3. Hypotheses testing

The findings demonstrated that three direct linkage hypotheses were verified. The linkage between green human resources management and circular economy was significant ($\beta = 0.359$, STDEV 0.041, T Statistic 8.748 > 1.96). Therefore, hypothesis

1 was supported. The linkage between circular economy and sustainable business performance was significant ($\beta = 0.239$, STDEV 0.033, *T* Statistic 7.189 > 1.96). Thus, hypothesis 2 was supported. Further, the linkage between green human resources management and sustainable business performance was significant ($\beta = 0.556$, STDEV 0.034, *T* Statistic 16.540 > 1.96). Accordingly, hypothesis 3 was supported. **Table 3** displays the information about hypothesis testing.

Table 3. Hypothesis test of direct effect.

	Original Sample (O)	**Sample Mean (M)**	**Standard Deviation (STDEV)**	***T* Statistics (|O/STDEV|)**	***P* Values**	**Remark**
Green HRM→Circular Economy	0.359	0.360	0.041	8.748	0.000	Significant
Circular Economy→Sustainable business performance	0.239	0.240	0.033	7.189	0.000	Significant
Green HRM→Sustainable business performance	0.556	0.554	0.034	16.540	0.000	Significant

The subsequent step was to determine the mediating and moderating variables. We examined the circular economy as a mediator of the linkage between green human resources management and sustainable business performance; then, environmental dynamism as a moderator of green human resources management and circular economy. **Table 4** indicates that the mediating effect of the circular economy on the linkage between green human resources management and sustainable business performance was significant ($\beta = 0.086$, STDEV 0.017, *T* Statistic 5.022 > 1.96). Accordingly, hypothesis 4 was accepted. Eventually, the moderating effect of environmental dynamism on the linkage between green human resources management and the circular economy was significant ($\beta = 0.124$, STDEV 0.044, *T* Statistic 2.847 > 1.96). Consequently, hypothesis 5 in the study was accepted (see **Figure 2**).

Table 4. Hypothesis test of indirect effect.

	Original Sample (O)	**Sample Mean (M)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	***P* Values**	**Remark**
Green HRM→Circular Economy→ Sustainable business performance	0.086	0.087	0.017	5.022	0.000	Significant
Moderating Effect Environmental dynamism*Green HRM→Circular Economy	0.124	0.126	0.044	2.847	0.005	Significant

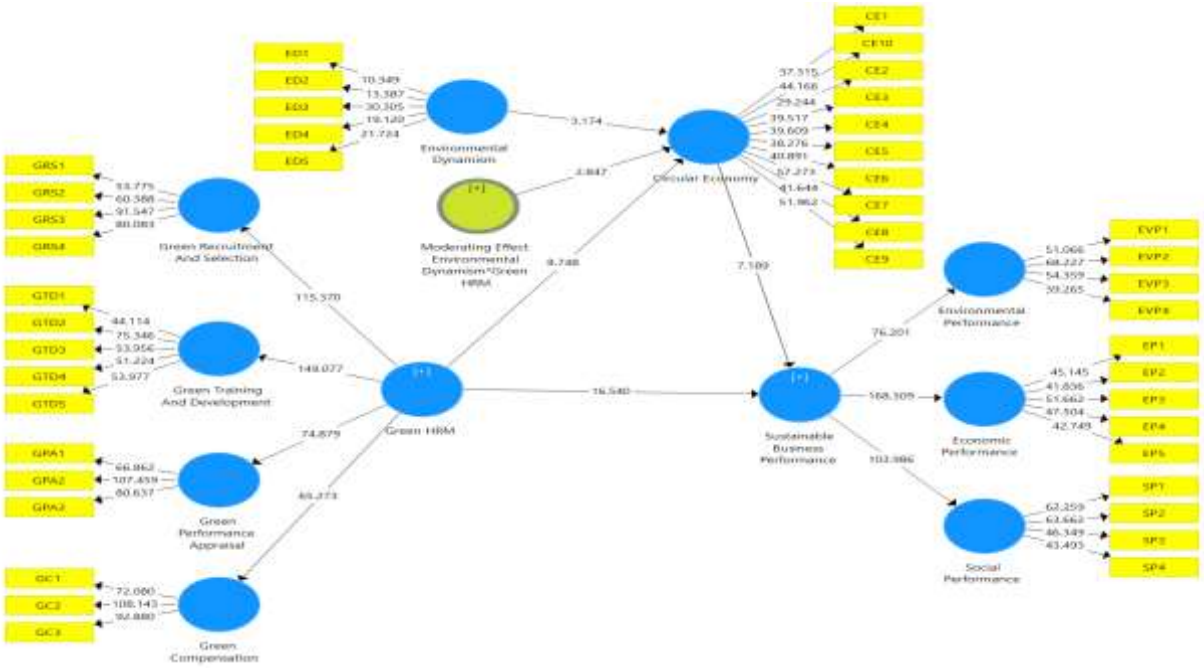

Figure 2. Output analysis.

5. Discussion

The growing ecological awareness transformed the notion of "go green", becoming the focus of diverse organizations, especially SMEs, which in previous studies were considered to contribute forthwith to ecological problems concerning water, energy, waste, and ecological preservation (Arsawan et al., 2023). Considering the limited, SMEs were required to utilize their resources efficiently. Accordingly, managers should pursue quality resources to strengthen environmental performance (Yadegaridehkordi et al., 2023) and preservation (Saleem et al., 2021). Hypothesis 1, which posited a positive linkage between green human resources management and sustainable business performance, was supported. This finding confirmed previous studies investigating and verifying this linkage in distinctive settings (Irani et al., 2022; Obeidat et al., 2023; Zaid et al., 2018). It emphasized the necessity of optimizing green enforcement to the top level by fostering a far-reaching ecological management system (Darvishmotevali and Altinay, 2022; Gupta et al., 2021) to assist organizations in accomplishing sustainable business performance at a high level (Haseeb et al., 2019; Jabbour et al., 2020).

The study's novelty adhered to the linkage between green human resources management and circular economy. The study augmented the latest scientific corroboration on the positive linkage between green human resources management and circular economy in decreasing pollution, driving energy effectiveness, and terminating the loops that optimize resource usage. It strengthened previous findings, which stated that green human resources management positively contributed to circular economy practices (Marrucci et al., 2021). The findings also reinforced the view that green human resources management was evident in sustaining sustainability through circular economy (Jabbour et al., 2020). Notably, this finding contributed to resolving the limitations pointed out in previous studies regarding the lack of scientific evidence on the direct effect of green human resources management on the circular

economy (Obeidat et al., 2023).

Hypothesis 3 verified scientific studies (Gupta et al., 2021; Jabbour et al., 2020) by demonstrating how the circular economy positively influenced sustainable business performance. CE implementation proved to maximize organizational sustainability with efficient resource allocation (Le et al., 2022) and promote sustainable-oriented innovation (Koval, Arsawan, et al., 2023) to reduce waste, reduce ecological harms, and energy saving (Barros et al., 2021; Gupta et al., 2021). Further, circular economy enforcement reduced raw materials consumption (Cheffi et al., 2023), facilitated resource allocation efficiency (AL-Khatib, 2023), and upgraded the organization's ecological reputation (Castro-Lopez et al., 2023). These findings addressed the gaps identified by previous researchers (Geissdoerfer et al., 2020; Korhonen et al., 2018) on the circular economy discourse; therefore, they provided an invaluable contribution as scientific evidence in the circular economy literature.

Further, hypothesis 4 supported the findings from previous study (Obeidat et al., 2023) that circular economy mediated the positive linkage between green human resources management and organizational sustainable business performance. Circular economy business model could be stimulated by adhering to a green management system (Darvishmotevali and Altinay, 2022), leverage circularity (Muisyo et al., 2022), ensure effective utilization of resources (Al-Hawari et al., 2021), decrease emission levels (Koval et al., 2023; Suhartanto et al., 2022), and elevate the value of ecologically friendly products (Whicher et al., 2018). These requirements were accomplished because the organization established a comprehensive ecological management system. Green human resources management, comprising green recruitment and selection, green training, green performance management, and green compensation, were reinforced to acquire the organization's ecological system preconditions and strategic objectives (Al-Hawari et al., 2021; Darvishmotevali and Altinay, 2022; Muisyo et al., 2022). Furthermore, the findings resonated with other researchers (Pham et al., 2020; Pieroni et al., 2021) that green human resources management fostered the practice of circular economy business model for organizational sustainability.

Eventually, hypothesis 5, environmental dynamism, was corroborated as a moderator variable of the linkage between green human resources management and circular economy. Configuring environmental dynamism assisted organizations in mitigating the effects of market turbulence, managing competitive intensity, and optimizing technology utilization by incorporating circular economy practices (Castro-Lopez et al., 2023). In this regard, environmental dynamism was an external driver for circular economy adoption (Bag et al., 2021). Therefore, it was necessary to adjust the strategic approach to transform the strategic approach and operations towards circularity (Santa-Maria et al., 2022). Accordingly, employees who properly comprehended the paramount of circular economy adoption would contribute to the enhancement of circular economy practices. Given the urgency to respond to environmental dynamism (Arsawan et al., 2023), organizations necessarily upgraded how green human resources management influenced employees' insight, behavior, and commitment to performing green initiatives (Haldorai et al., 2022; Irani et al., 2022; Obeidat et al., 2023). Thus, environmental dynamism would reinforce green human resources management in enhancing circular economy initiatives by stimulating the

organization to elevate the strategic pattern towards circularity (Sundar et al., 2023). The explanatory power of environmental dynamism has an important impact on implementing a circular economy in SMEs. For example, if an organization changes their business model with a circular economy approach, environmental dynamism is encouraged at the strategic level because of pressure from the government regarding the importance of preserving the environment.

5.1. Theoretical implications

First, the findings of hierarchical testing of green human resources management in the study are significant. The analyzed green human resources management hierarchical model demonstrates the hierarchical approach order encompassing green training and development, green recruitment and selection, green performance management and appraisal, and green compensation dimensions. Accordingly, the findings of green human resources management hierarchical testing validate this approach's usability in comprehending the significance of each green human resources management dimension (Ahmed et al., 2021; Marrucci et al., 2021). The green training and development dimensions are crucial and are the principal trigger for building environmental awareness. Further, green training and development is an organizational roadmap for achieving environmental performance. Thus, theoretically, this finding extends the green human resources management literature in the SME sector (Elshaer et al., 2021; Sobaih et al., 2021). The hierarchy of green human resources management is pertinent for scholars and SME business professionals with a desire for a brief notion of the sophisticated green human resources management variables.

Second, another notable finding is identifying the most influential determinants of sustainable business performance. Although green human resources management and circular economy significantly have direct and indirect influences, the findings indicate that the overall effect of green human resources management is more influential than other factors. The finding verifies previous studies highlighting the pivotal role of green human resources management in determining sustainable business performance (Obeidat et al., 2023). These findings indicate that strengthening green human resources management is critical in establishing sustainable business performance (Irani et al., 2022; Zaid et al., 2018). Thus, this finding is instrumental in advancing the study of green human resources management and circular economy, given its roles as an endeavor to scientifically confirm the green human resources management, circular economy, and sustainable business performance linkage as the provided framework developed by (Jabbour et al., 2020).

Third, although previous literature confirms the linkage between green human resources management and sustainable business performance, the scientific literature is lacking in investigating how green human resources management practices influence sustainable business performance by scrutinizing the plausible mediating impact of the circular economy on green human resources management and performance linkages. Consequently, the study fills the aforementioned limitations in the scientific literature. It includes an additional variable, i.e., environmental dynamism, that can profoundly impact the hypothesized linkages linking green human

resources management, circular economy, and sustainable business performance, and hence investigates an enhanced conceptualized framework. Subsequently, the study provides insight into the discipline by connecting green human resources management and sustainable business performance by circular economy enforcement in SME contexts, which is frequently overlooked when examining this linkage (Arsawan et al., 2023; Pizzi et al., 2021). The study corroborates previous studies that recognize the positive influence of green human resources management on environmental performance, which further views performance through extensive perspective by encompassing overall sustainable business performance dimensions, i.e., environmental, social, and economic. Accordingly, the study is perceived as a scientific endeavor that successfully verifies the positive linkage between green human resources management, circular economy, and sustainable business performance, including environmental, social, and economic dimensions.

Fourth, the study refines the NRBV (S. Hart, 1995) by elucidating the mechanism that perceives green human resources management as a pollution prevention endeavor in circular economy practices. green human resources management equips employees with environmental awareness capable of initiating pro-ecological strategies that are transformed into strategic orientation and commitment to the environment through the scientific model. Since the natural resource-based view suggests three main points, i.e., ecologically-oriented capability, pollution elimination, product supervision, and sustainable development, the current framework is evident in developing these three points by conducting green human resources management and circular economy towards sustainable business performance.

5.2. Managerial implications

Valuable managerial implications emerged from the current study. First, the study recommends that for the SME sector to mitigate ecological problems and accomplish sustainable business performance, they should enforce and endorse green human resources management enforcement and circular economy frameworks. SME managers can leverage employees' engagement in green activities by periodically providing green training and development. It will allow employees to grasp the policies, promote awareness, and take ownership of being part of an organization committed to ecological sustainability. Subsequently, by implementing ecological training practices as a priority, it is envisioned to increase the implementation of green knowledge, which further serves as an invaluable investment in the future. Accordingly, circular economy practices provide a system where green human resources management enforcement enhances sustainable business performance within the SME sector and is potentially pivoted towards a circular economy. However, business professionals should recognize distinctive circular economy approaches in each sector (i.e., internal environmental management, eco design, and corporate asset management and recovery) (Arsawan et al., 2023; Bag et al., 2021). Therefore, we suggest that SMEs adopt sustainable technologies to enhance the potential of implementing circular business models.

Second, the SME sector has to incorporate green practices in its strategic agenda to achieve a competitive advantage in responding to government or market demands.

When implementing circularity is imperative, SMEs become more agile in responding to changes in the industry's competitive structure. Consequently, they are equipped to advance in the competition and become crucial triggers for long-term success and sustainability. Ultimately, the circular economy business model implementation should engage all stakeholders by elevating their insight, enthusiasm, and environmental awareness. For example, employees can explore projects that use excess raw items and enthusiastically facilitate recycling activities to minimize overall utilization. Therefore, managers can reinforce it by setting concrete examples and articulating the organization's ecological values, followed by a rewarding program of recognition that incentivizes proactivity. These stimulations motivate employees to implement green culture into their regular activities. Further, this program serves as a stimulus to measure employees' consistency in ecological preservation.

6. Limitations and further study

Notwithstanding the significant theoretical and managerial additions, the study comprises several constraints for future research considerations. First, the study was centered on the SME industry in Bali, Indonesia. Consequently, the findings are not extensible to broader industrial or cultural contexts. Subsequently, the findings ought to be regarded with caution when making generalizations. The upcoming studies may experiment with diverse industries, i.e., hospitality, automobile, or high-tech industries in developed country settings, to verify the designated model. Thus, it can compare each business sector's and country's efforts in enacting sustainable development goals. Therefore, developed countries need to transfer their technology and knowledge regarding the implementation of a circular economy that can be adopted by other countries. In this case, developed countries can provide technology transfer to developing countries such as carrying out green innovation, eco design so that circular economy practices can run well.

Second, the current study only incorporates sustainable business performance as an organizational output. Therefore, future studies can strengthen the explanatory power of the latest model by scrutinizing other moderator mechanisms and mediators, i.e., green team, green innovation, top management support, and organizational ecological culture, that may be affecting the green human resources management, circular economy, and sustainable business performance linkages. The green team can be an important driver because it can stimulate environmental performance. Green innovation can be an important trigger for circular economy business models and organizational output such as sustainable business performance and environmental legitimacy. On the other hand, top management support is an important driver in developing environmentally oriented policies (Arsawan et al., 2023). Finally, organizational ecological culture can strengthen an organization's environmental identity to be able to contribute to saving the environment.

Third, recognizing that SMEs significantly contribute to ecological conservation, future research could consider how SMEs are engaged in waste management to reduce the effects of production and technology adoption to anticipate this issue. Thus, SMEs possess various scenarios to optimize business performance and promote ecological preservation. By optimizing waste management and environmentally friendly

technology, SMEs can minimize the use of raw materials so they can protect natural resources. This will have an impact on asset and cost effectiveness, which ultimately improves organizational and environmental performance.

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