



Strategic Renewal and Green Innovation for MSME Sustainable Performance in Post-Pandemic Emerging Economies

Darmawansyah Darmawansyah *

Hasanuddin University, Makassar, Indonesia

*darmawansyah24a@student.unhas.ac.id

Abstract. This study investigates how strategic renewal and green innovation shape sustainable performance among micro, small, and medium enterprises (MSMEs) in Makassar, Indonesia. Grounded in the Resource-Based View and Dynamic Capabilities Theory, we posit that adaptive strategic renewal enhances sustainability both directly and indirectly by nurturing routines that promote eco-efficient products, processes, and resource use. Using a quantitative design with Partial Least Squares Structural Equation Modelling (PLS-SEM), primary survey data from 120 valid MSME respondents were analysed. Results show that strategic renewal significantly improves both green innovation and sustainable performance, while green innovation partially mediates the renewal–performance link, indicating that renewal contributes to sustainability beyond its innovation channel. These findings extend dynamic capabilities arguments to resource-constrained MSME contexts by clarifying how sensing, seizing, and transforming activities translate into sustainability outcomes. Managerially, owners should institutionalise renewal routines, invest in low-cost eco-efficiency, and cultivate partnerships and training that embed green innovation in day-to-day operations. For policy, targeted incentives, capacity-building, and accessible green financing can amplify firm efforts. Limitations include the cross-sectional design and single-city focus; future studies should adopt longitudinal or multi-site designs and test contingencies such as digital readiness, supply-chain pressures, and regulatory support.

Keywords: Strategic Renewal, Green Innovation, Sustainable Performance, MSMEs, Dynamic Capabilities.

1 Introduction

Micro, Small, and Medium Enterprises (MSMEs) continue to play a central role in sustaining national economies, particularly in developing countries such as Indonesia. Representing more than 99% of all registered business entities and employing over 97% of the national workforce, MSMEs in Indonesia contribute approximately 61% to the national GDP [1]. These enterprises are not only vital for inclusive economic development but also act as shock absorbers during periods of macroeconomic instability, as witnessed during the COVID-19 pandemic. In regional economic centres

© The Author(s) 2026

M. Nohong et al. (eds.), *Proceedings of the 10th International Conference on Accounting, Management, and Economics (10th ICAME 2025)*, Advances in Economics, Business and Management Research 388,

https://doi.org/10.2991/978-94-6239-709-5_145

such as Makassar—widely recognised as the commercial hub of Eastern Indonesia—MSMEs form the foundation of urban and peri-urban economies. Their contributions span both traditional sectors (e.g. food, crafts, services) and emerging industries (e.g. digital and creative economies). However, despite their significance, MSMEs remain vulnerable to structural constraints, such as limited access to financing, regulatory burdens, environmental externalities, and low innovation intensity.

As global and national priorities shift toward long-term sustainability, MSMEs are increasingly expected to not only recover from crises but also adapt to new economic models that emphasise environmental accountability, technological responsiveness, and resilience. In this context, the concept of strategic renewal becomes pivotal. Strategic renewal refers to a deliberate organisational effort to redefine strategy, reconfigure resources, and develop new capabilities in response to dynamic environmental conditions [2, 3]. For MSMEs, this process is often constrained by limited absorptive capacity and informality. However, it also opens opportunities for transformative change, particularly when renewal is linked to innovation and sustainability. Within the evolving business landscape, strategic renewal becomes a critical antecedent that enables MSMEs to move beyond reactive survivalism toward proactive competitiveness and long-term value creation.

One of the key pathways through which strategic renewal can translate into performance outcomes is via green innovation. Defined as the implementation of environmentally friendly products, processes, or organisational practices, green innovation has been shown to generate both economic and ecological benefits for firms [4, 5]. For MSMEs, green innovation can take the form of energy-saving practices, eco-packaging, waste minimisation, or adoption of cleaner technologies. Although such practices are often assumed to be resource-intensive, recent studies suggest that MSMEs can pursue green innovation incrementally and behaviourally, driven by strategic intention rather than scale [6]. Despite its increasing relevance, the empirical literature examining green innovation as a mediating mechanism in MSME performance models remains fragmented, especially within emerging market settings. Most studies either focus on direct relationships (e.g. innovation → performance) or investigate large firms with formalised R&D units, thereby overlooking the unique strategic logic of small businesses operating in hybrid institutional environments.

This study addresses that gap by proposing and empirically testing a model in which green innovation mediates the relationship between strategic renewal and sustainable performance among MSMEs in Makassar. Unlike conventional performance metrics that focus solely on profitability or growth, this study adopts a broader construct of sustainable performance that includes environmental stewardship, social responsibility, and operational efficiency. The Partial Least Squares Structural Equation Modelling (PLS-SEM) approach is employed to estimate the structural relationships and assess the explanatory power of the model. This methodological choice is particularly suitable given the exploratory nature of the study, the presence of latent variables, and the moderate sample size typically associated with MSME research [7]. The research model offers a novel contribution by integrating strategic and sustainability constructs into a unified framework applicable to small firms, with practical relevance in the post-pandemic and climate-vulnerable context of Indonesia.

In terms of theoretical contribution, the study enriches the literature on strategic management and sustainability by positioning green innovation as a dynamic capability that enables MSMEs to leverage strategic renewal into tangible performance outcomes. This builds upon and extends the Resource-Based View (RBV) and dynamic capabilities theory, which have largely been applied to large-scale or technology-intensive firms [8]. By focusing on MSMEs, the study reveals how non-technological innovation and behavioural renewal can jointly influence sustainability pathways, thus offering a more inclusive and context-sensitive interpretation of these theoretical frameworks.

From a policy perspective, the findings of this research can inform regional and national strategies aimed at accelerating the green transformation of the MSME sector. The Indonesian government, through initiatives such as Kredit Usaha Rakyat Hijau and the Ministry of Cooperatives and MSMEs' green incubation programmes, has already signalled its commitment to embedding sustainability into small business development. However, the effectiveness of these programmes depends on understanding the behavioural and strategic factors that drive MSMEs toward innovation and renewal. By providing empirical evidence from a strategically located region, this study supports the design of evidence-based interventions, including targeted training, capacity-building, and green certification schemes adapted to the realities of small enterprises in transitional economies.

Finally, this research responds to a pressing need to reframe MSME development through the lens of strategic renewal and ecological innovation. By combining managerial and sustainability perspectives, it aims to contribute to both scholarly debates and actionable policy design, with implications that extend beyond Makassar to other urban MSME clusters in Indonesia and comparable emerging markets.

2 Literature Review

2.1 Strategic Renewal

Strategic renewal refers to the deliberate and dynamic efforts by organisations to redefine their strategic direction, reconfigure resources, and re-establish organisational competences in response to changing environmental conditions and long-term survival imperatives [2, 9]. In the context of small and medium-sized enterprises (SMEs), and particularly micro and small enterprises in emerging markets, strategic renewal may manifest in non-structural forms, such as market repositioning, product diversification, and digital transformation. While resource limitations often constrain the scope of renewal for MSMEs, they may simultaneously foster agility, responsiveness, and innovative decision-making.

From a theoretical perspective, strategic renewal is rooted in the Dynamic Capabilities Theory, which posits that sustained performance depends on a firm's ability to integrate, build, and reconfigure internal and external competences [10]. Complementing this is the Resource-Based View (RBV), which highlights how firms with valuable, rare, inimitable, and non-substitutable resources—including strategic leadership and innovation culture—can achieve competitive advantage [11]. Within the

MSME landscape, strategic renewal reflects an intentional adaptation to uncertainty and the pursuit of long-term value through learning, innovation, and capability enhancement.

2.2 Green Innovation

Green innovation encompasses the development and implementation of new products, processes, or management systems that contribute to environmental sustainability while maintaining or enhancing business competitiveness [12]. It includes initiatives such as waste reduction, energy efficiency, green product design, eco-packaging, and adoption of cleaner technologies. While early conceptualisations of green innovation emphasised technological sophistication and regulatory compliance, recent literature acknowledges the strategic relevance of green innovation for firms of all sizes, including resource-constrained MSMEs [13, 14].

Green innovation serves as both a strategic response to environmental pressures and a proactive pathway to achieve legitimacy, customer loyalty, and differentiation. In the context of SMEs, green innovation is often behavioural and incremental, rather than capital-intensive. Moreover, it plays a vital role in aligning business models with sustainability imperatives, enabling firms to embed ecological consciousness into their core strategy. Empirical studies have found positive relationships between green innovation and firm performance, especially when it is driven by internal strategic commitment rather than external compliance [5].

The growing literature recognises green innovation not merely as an outcome but as a mediating mechanism between strategic actions and performance outcomes. Firms that engage in strategic renewal are more likely to embrace green innovation, which subsequently enhances both economic and environmental performance. Yet, this relationship remains underexplored within the context of MSMEs in emerging economies.

2.3 Sustainable Performance

Sustainable performance refers to an organisation's ability to simultaneously achieve economic, environmental, and social goals over time. It expands upon the traditional view of performance that is narrowly focused on profitability and growth, and incorporates dimensions of resource stewardship, community well-being, and environmental responsibility [15]. This tripartite conception of performance is rooted in the Triple Bottom Line (TBL) framework, which has become central to discussions on corporate sustainability [16].

In MSMEs, sustainable performance is shaped by internal values, managerial commitment, and the firm's capacity to integrate sustainability into business operations. It can be reflected in improved operational efficiency, employee satisfaction, environmental compliance, and resilience to market shocks. However, realising sustainable performance is often challenged by limited financial and knowledge resources, lack of institutional support, and the dominance of short-termism.

Several studies have highlighted factors influencing sustainable performance in SMEs, such as innovation capability, stakeholder engagement, and strategic orientation

[17]. Despite this, empirical investigations that link strategic renewal and green innovation to sustainable performance in the MSME context—especially in Southeast Asia—remain sparse, necessitating more nuanced models that account for local realities and strategic behaviour.

2.4 Empirical Evidence from Southeast Asia

In Southeast Asia, the discourse on MSMEs and sustainability has grown significantly, reflecting the region's exposure to climate risks and regulatory transformations. In Indonesia, studies by Lita et al. [18] indicate that entrepreneurial orientation and agility significantly shape MSME innovation and competitiveness. Putra et al. [19] found that green innovation practices among MSMEs in Yogyakarta were primarily influenced by leadership and market orientation, though hindered by lack of green financing.

Similarly, Prayag et al. [20] demonstrated that strategic capability renewal enabled MSMEs in Surabaya to recover more effectively during the post-pandemic era. However, their model did not explicitly include green innovation as an intervening construct. In Malaysia, Mohamad et al. [21] showed that green innovation significantly enhances SME performance when supported by public policy, while Moonpa et al. [22] observed that environmental values and strategic partnerships play a vital role in Thai SMEs' environmental practices.

Overall, the literature reflects increasing recognition of the role of innovation and renewal in MSME sustainability. However, most studies do not integrate strategic renewal, green innovation, and sustainable performance into a single empirical framework, particularly in regional contexts like Makassar where traditional and modern business models coexist. This study aims to address this gap.

2.5 Hypothesis Development

Based on the theoretical and empirical review, this study proposes a conceptual framework consisting of one independent variable (strategic renewal), one mediating variable (green innovation), and one dependent variable (sustainable performance).

Firms engaging in renewal activities often report improved efficiency, competitiveness, and market relevance, all of which contribute to superior performance outcomes [9, 10]. While much of the existing evidence is drawn from large organisations, emerging studies on MSMEs indicate that renewal can also foster sustainable behaviour, especially when aligned with long-term value creation [20, 23]. Hence:

H1: Strategic renewal has a positive effect on sustainable performance.

However, strategic renewal encourages firms to reassess their priorities and engage in novel approaches to problem-solving, often leading to innovation. Green innovation, as an extension of strategic and environmental orientation, is increasingly seen as a logical outcome of firms seeking to redefine their roles in ecologically conscious markets [12, 13]. Empirical evidence suggests that firms which undertake strategic renewal are more

likely to implement environmental practices and develop eco-friendly products or services [5, 21]. Thus:

H2: Strategic renewal has a positive effect on green innovation.

Firms that engage in green innovation tend to improve their environmental footprint, meet regulatory requirements, and enhance their brand image—all of which contribute to overall performance. In MSMEs, even modest innovations such as waste reduction or energy efficiency can yield significant benefits in terms of stakeholder satisfaction and operational resilience [14, 21]. Therefore:

H3: Green innovation has a positive effect on sustainable performance.

Drawing on the dynamic capabilities perspective, green innovation serves as a key capability that transforms strategic intent into sustainable outcomes. As such, it acts as a conduit through which strategic renewal translates into improved environmental and economic performance. Several studies have validated this mediating role, although few have done so in the MSME sector or within the Southeast Asian context [5, 22]. Accordingly:

H4: Green innovation mediates the relationship between strategic renewal and sustainable performance.

3 Methodology

This study employs a quantitative, cross-sectional research design to examine the causal relationships between strategic renewal, green innovation, and sustainable performance among micro, small, and medium enterprises (MSMEs) in Makassar, Indonesia. A positivist paradigm underpins the approach, aiming to test pre-defined hypotheses using statistical inference techniques [24, 25].

The target population comprises active MSMEs registered in the Makassar region, which serves as a strategic commercial hub in Eastern Indonesia. A purposive sampling technique was adopted to ensure the inclusion of MSMEs with a minimum operational age of three years and awareness of sustainability-related practices. Following the guidelines for minimum sample size in PLS-SEM—i.e., 10 times the maximum number of indicators in a construct [26]—a minimum of 40 observations was required. However, to increase statistical power and generalisability, a total of 120 valid responses were collected and used in the final analysis.

Primary data were collected through a structured self-administered questionnaire, distributed via online and offline channels between May and July 2025. Prior to distribution, the questionnaire was validated by three academic experts and piloted with 15 MSME owners to ensure clarity and relevance. Ethical approval was obtained from the university research ethics committee, and informed consent was secured from all participants.

All constructs in this study were operationalised using reflective measurement models, with indicators adapted from previously validated instruments. Each item was

measured on a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), to capture the degree of agreement of MSME respondents in Makassar regarding each statement.

The independent variable, Strategic Renewal, was measured through four indicators derived from the conceptual frameworks [3, 27]. These indicators reflect the firm's capability to reinterpret its market position, revise business models, and reconfigure internal resources to maintain competitiveness in a dynamic environment. The items also captured how frequently the enterprise reassessed its strategic orientation and pursued new growth opportunities.

The mediating variable, Green Innovation, was assessed using four indicators based on the studies by Yuan and Cao [28]. These indicators cover the implementation of environmentally friendly processes, the development of green products or services, energy-saving initiatives, and the integration of ecological considerations into core business strategies.

The dependent variable, Sustainable Performance, was measured using four items adapted from prior sustainability research frameworks grounded in the triple bottom line perspective [29, 16]. These items reflect the organisation's ability to generate consistent economic benefits, minimise its environmental impact, and contribute positively to social welfare. The construct aims to capture the holistic sustainability outcomes that extend beyond financial metrics.

To test the hypothesised relationships and assess the overall research model, data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM), implemented via SmartPLS version 4.0. This method was selected due to its suitability for theory development, its capacity to handle non-normal data distributions, and its effectiveness in estimating complex models involving latent variables and mediation effects [26, 30].

The analytical process was conducted in two main stages. The first stage focused on evaluating the measurement model, assessing internal consistency reliability through Cronbach's alpha and composite reliability (CR), as well as convergent validity through average variance extracted (AVE). Discriminant validity was also examined using both the Fornell–Larcker criterion and the Heterotrait–Monotrait ratio (HTMT).

In the second stage, the structural model was assessed to examine the relationships among the latent constructs. Key evaluation criteria included the coefficient of determination (R^2) for endogenous variables, effect size (f^2) for individual predictor contributions, and predictive relevance (Q^2) using blindfolding procedures. To test the statistical significance of the path coefficients, bootstrapping procedures with 5,000 subsamples were conducted. This enabled the estimation of standard errors and confidence intervals for each hypothesised path, providing robust support for hypothesis testing.

4 Results

The data analysis begins with a descriptive overview of the respondents to contextualise the findings of this study. Understanding the profile of participating micro, small, and

medium enterprises (MSMEs) provides insight into the diversity of businesses operating within Makassar, an important commercial centre in Eastern Indonesia. This initial profile allows for an informed interpretation of the structural model outcomes by examining variations in business type, scale, duration of operation, legal status, and owner education, as presented in Table 1.

Table 1. Respondents' Profile

Category	Sub-category	Frequency	Percentage
Type of Business	Food and Beverage	36	30.0
	Fashion and Accessories	28	23.3
	Handicrafts	19	15.8
	Digital/Creative Industries	14	11.7
Business Age	Services (e.g. beauty, printing)	23	19.2
	< 3 years	18	15.0
	3–5 years	41	34.2
Number of Employees	6–10 years	37	30.8
	> 10 years	24	20.0
	1–5 (Micro)	58	48.3
Legal Status	6–19 (Small)	43	35.8
	20–99 (Medium)	19	15.8
	Informal (Unregistered)	22	18.3
Owner's Education	Formal (Licensed/Registered)	98	81.7
	High School or Below	25	20.8
	Diploma (D1–D3)	33	27.5
	Undergraduate (S1)	44	36.7
	Postgraduate (S2/S3)	18	15.0

Source: SmartPLS 4 output, authors' calculations (2025).

Table 1 presents the demographic characteristics of the respondents, comprising 120 MSME owners in Makassar. The majority of businesses were in the food and beverage sector (30%), followed by fashion and accessories (23.3%). Most respondents had operated their businesses for between 3 and 10 years (65%), indicating a relatively stable and experienced sample.

In terms of scale, 48.3% of the enterprises were categorised as micro-enterprises (1–5 employees), while 15.8% represented medium-sized businesses. Notably, over 80% of the businesses were formally registered, reflecting a growing trend of legal compliance among local MSMEs. Regarding the educational background of the owners, more than half held at least an undergraduate degree (51.7%), suggesting a reasonable level of managerial literacy within the sample.

Following the demographic profiling, the next stage of the analysis involves the evaluation of the measurement model, which assesses the reliability and validity of the latent constructs. Table 2 provides the descriptive statistics for each item, as well as the quality criteria including outer loading, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE). These indicators are essential in ensuring that

the constructs used in the structural model are both conceptually sound and statistically robust.

Table 2. Descriptive Statistics and Measurement Quality of Constructs

Construct	Item	Mean	St. Dev.	Outer Loading	Cronbach's Alpha	CR	AVE
Strategic Renewal (SR)	SR1	4.188	0.782	0.836	0.822	0.884	0.657
	SR2	4.133	0.865	0.810			
	SR3	4.167	0.849	0.829			
	SR4	4.204	0.832	0.794			
Green Innovation (GI)	GI1	4.146	0.891	0.842	0.853	0.898	0.688
	GI2	4.119	0.934	0.831			
	GI3	4.097	0.917	0.843			
	GI4	4.126	0.901	0.812			
Sustainable Performance (SP)	SP1	4.221	0.842	0.802	0.875	0.912	0.678
	SP2	4.183	0.905	0.827			
	SP3	4.142	0.918	0.841			
	SP4	4.215	0.881	0.826			

Source: SmartPLS 4 output, authors' calculations (2025).

As presented in Table 2, the mean values for all observed items range from 4.097 to 4.221, indicating a consistently positive perception across respondents toward each construct, based on a 5-point Likert scale. This suggests that respondents generally agreed with the statements representing strategic renewal, green innovation, and sustainable performance.

All outer loading values exceed the minimum threshold of 0.70, demonstrating that the indicators exhibit strong correlations with their respective latent variables [31]. The Cronbach's alpha values for all constructs are above 0.80, indicating good internal consistency [32]. Additionally, the composite reliability (CR) scores also exceed 0.88, further confirming the reliability of the constructs.

In terms of convergent validity, all constructs recorded AVE values greater than 0.65, well above the standard minimum threshold of 0.50 [33]. This confirms that the variance explained by the constructs is greater than the variance due to measurement error.

Taken together, the results suggest that the measurement model demonstrates strong psychometric properties, and therefore, it is appropriate to proceed to the structural model evaluation.

Table 3. Structural Model Results

Path	Original Sample	Std. Dev.	t-stat.	p-values	Decision
SR → GI	0.641	0.053	12.094	0.000***	H1 is accepted
SR → SP	0.278	0.066	4.212	0.000***	H2 is accepted
GI → SP	0.511	0.059	8.661	0.000***	H3 is accepted

Note: $t > 1.95$. *** $p < 0.001$; ** $p < 0.05$

Source: SmartPLS 4 output, authors' calculations (2025).

Table 3 presents the results of the structural model analysis, including path coefficients, t-statistics, and significance values. All hypothesised relationships in the proposed model are supported, with path coefficients being statistically significant at the 0.001 level.

The path from Strategic Renewal (SR) to Green Innovation (GI) yielded a coefficient of 0.641 ($t = 12.094, p < 0.001$), indicating a strong and significant positive effect. This suggests that MSMEs engaging in strategic renewal activities are more likely to adopt green innovation practices. The second hypothesis, which tested the direct effect of Strategic Renewal (SR) on Sustainable Performance (SP), is also supported, with a path coefficient of 0.278 ($t = 4.212, p < 0.001$). Although the magnitude is moderate, it remains statistically robust, highlighting the role of strategic renewal in enhancing long-term organisational sustainability.

Furthermore, the relationship between Green Innovation (GI) and Sustainable Performance (SP) is confirmed, with a coefficient of 0.511 ($t = 8.661, p < 0.001$). This finding reinforces previous research, indicating that firms prioritising environmental innovation are more likely to achieve better sustainability outcomes, particularly in terms of operational resilience, environmental compliance, and stakeholder trust.

Collectively, these results validate the proposed structural paths and confirm the theoretical framework grounded in dynamic capabilities and sustainability-oriented innovation. The findings underscore the importance of strategic renewal as a driver not only of green innovation but also of sustainable organisational outcomes among MSMEs in the post-pandemic economic context.

Table 4. Mediation Effect Results

Hypothesis Code	Mediation Path	Indirect Effect	t-stat	p-value	Result
H4	SR → GI → SP	0.328	7.214	0.000	Supported; Partial Positive Mediation

Note: Indirect effect is significant at $p < 0.05$ ($t > 1.96$); type of mediation determined based on direct and indirect significance criteria.

Source: SmartPLS 4 output, authors' calculations (2025).

The mediation effect was examined to determine whether Green Innovation (GI) mediates the relationship between Strategic Renewal (SR) and Sustainable Performance (SP). As presented in Table 4, the indirect effect of Strategic Renewal (SR) on Sustainable Performance (SP) through Green Innovation (GI) is statistically significant ($\beta = 0.328, t = 7.214, p < 0.001$), exceeding the minimum threshold of $t > 1.96$ for $p < 0.05$.

Given that both the direct path (Strategic Renewal → Sustainable Performance) and the indirect path (Strategic Renewal → Green Innovation → Sustainable Performance) are significant, this result supports a partial positive mediation. This suggests that while

Strategic Renewal has a direct influence on Sustainable Performance, part of its effect is transmitted through Green Innovation practices.

5 Discussion

The findings of this study highlight the strategic importance of renewal capabilities and green innovation in enhancing sustainable performance among micro, small, and medium enterprises (MSMEs) in Makassar, Indonesia. As hypothesised and empirically validated, strategic renewal exerts a significant direct effect on both green innovation and sustainable performance, while green innovation also mediates this relationship, forming a partial positive mediation pathway.

The positive and significant influence of strategic renewal on green innovation supports previous research which emphasises the need for firms to dynamically realign their strategies to meet environmental and market changes [12, 13]. In the context of MSMEs operating in post-pandemic economic recovery, strategic renewal is demonstrated to foster a proactive orientation toward environmentally conscious innovation. This finding is consistent with the work of Mondal et al. [14], who observed that renewal capabilities serve as catalysts for eco-innovation within small enterprises in China and Southeast Asia.

Furthermore, the direct effect of strategic renewal on sustainable performance reflects the idea that firms with adaptive strategic mechanisms are better positioned to respond to competitive, regulatory, and ecological demands, thereby enhancing economic viability, stakeholder legitimacy, and long-term survival [15, 16]. In the context of Indonesian MSMEs, which often face structural and institutional constraints, this pathway provides empirical support for policy frameworks encouraging continuous renewal as a resilience strategy.

The mediation analysis further reveals that green innovation acts as a significant conduit through which strategic renewal influences sustainability outcomes. This partial mediation suggests that while strategic renewal directly enhances performance, the adoption of green innovation reinforces and extends this effect. This aligns with previous studies by Prayag et al. [20] and Mohamad et al. [21], who argue that green innovation capabilities represent an operational manifestation of strategic adaptability in driving long-term sustainability.

These findings offer several contributions to the literature. First, they validate the dynamic capabilities perspective in the context of sustainability by demonstrating that MSMEs' ability to renew strategies and engage in innovation jointly enhances performance. Second, this study adds to the limited body of empirical research on green innovation within MSMEs in Southeast Asia, offering new insights specific to Makassar as an emerging trade centre in Eastern Indonesia. Third, by confirming the mediating role of green innovation, the study integrates environmental responsiveness into the broader strategic management discourse, addressing the call for sustainability-oriented models in the post-pandemic era [23].

From a policy standpoint, these results suggest that supporting MSMEs through structured programmes on strategy renewal and environmentally responsible

innovation could be instrumental in achieving Indonesia's broader goals for sustainable development. Capacity-building interventions should not only target product or process innovation but also foster the strategic reflexivity of firms to continuously adapt and evolve in changing ecological and economic landscapes.

6 Conclusion

This study examined the strategic mechanism through which micro, small, and medium enterprises (MSMEs) in Makassar enhance their sustainable performance, by focusing on the interplay between strategic renewal and green innovation. Anchored in the Resource-Based View (RBV) and Dynamic Capabilities Theory, the research demonstrated that internal strategic resources, when adaptively reconfigured, serve as foundations for innovation and long-term sustainability.

Empirical analysis using Partial Least Squares Structural Equation Modelling (PLS-SEM) revealed three key findings. First, strategic renewal positively influences green innovation, supporting the notion that dynamic capabilities drive environmental responsiveness. Second, strategic renewal directly enhances sustainable performance, confirming its central role in building organisational resilience. Third, green innovation partially mediates this relationship, thus acting as a conduit through which strategic adaptability translates into ecological and economic benefits.

These findings make both theoretical and practical contributions. Theoretically, the study extends RBV by integrating sustainability-oriented innovation as a strategic intangible asset, and enriches the Dynamic Capabilities framework by contextualising its application within MSMEs in a post-pandemic emerging economy. Practically, the results suggest that MSMEs, supported by enabling policy and institutional frameworks, can enhance their competitiveness and resilience by embedding innovation in their strategic posture.

Nevertheless, several limitations must be acknowledged. First, the cross-sectional design limits the ability to draw causal inferences over time. Future research could employ longitudinal methods to examine how strategic renewal and green innovation evolve and influence performance dynamically. Second, the study is geographically limited to Makassar, which may constrain the generalisability of the findings. Comparative research across provinces or countries in Southeast Asia would provide broader validation of the model. Third, while the model focuses on internal capabilities, future studies could integrate contextual moderators—such as government support, digital maturity, or industry characteristics—to further explain performance variance.

Despite these limitations, this research offers valuable insights for scholars and practitioners seeking to understand how MSMEs can pursue sustainability through strategic and innovative means in volatile and resource-constrained environments.

References

1. Tambunan, T.: Evidence on the use of internet for businesses by MSEs in a Developing Country: The Indonesian case. *Anais da Academia Brasileira de Ciências*, 92(1), e20180555 (2020). <https://doi.org/10.1590/0001-3765202020180555>
2. Anand, A., Singh, S., Bowen, M., & Rangarajan, D.: Strategic renewal during crises - A pragmatist proposition for multinational enterprises in a globalized world. *Journal of International Management* (2024). <https://doi.org/10.1016/j.intman.2024.101134>
3. Raofian, A., & Ghatari, A.: Analyzing factors influencing strategic renewal in young companies: an interpretive structural modeling approach. *Journal of Small Business and Enterprise Development* (2025). <https://doi.org/10.1108/jsbed-12-2023-0596>
4. Liu, M., Liu, L., & Feng, A.: The Impact of Green Innovation on Corporate Performance: An Analysis Based on Substantive and Strategic Green Innovations. *Sustainability* (2024). <https://doi.org/10.3390/su16062588>
5. Le, T.: How do corporate social responsibility and green innovation transform corporate green strategy into sustainable firm performance? *Journal of Cleaner Production* (2022). <https://doi.org/10.1016/j.jclepro.2022.132228>
6. Idrees, H., Xu, J., Ralison, N., & Kadyrova, M.: Does leadership and management support facilitate green knowledge acquisition and green innovation: a moderated mediation approach. *Business Process Management Journal*, 29, 1249–1276 (2023). <https://doi.org/10.1108/bpmj-12-2022-0639>
7. Zulkifli, R., Aimran, N., Deni, S., & Badarisam, F.: A comparative study on the performance of maximum likelihood, generalized least square, scale-free least square, partial least square and consistent partial least square estimators in structural equation modeling. *International Journal of Data and Network Science* (2022). <https://doi.org/10.5267/j.ijdns.2021.12.015>
8. Mubeen, A., Nisar, Q., Patwary, A., Rehman, S., & Ahmad, W.: Greening your business: nexus of green dynamic capabilities, green innovation and sustainable performance. *Environment, Development and Sustainability*, 1–27 (2023). <https://doi.org/10.1007/s10668-023-03574-6>
9. Gauthier, J., & Zhang, Z.: Green knowledge management and strategic renewal: a discursive perspective on corporate sustainability. *International Journal of Productivity and Performance Management*, 69, 1797–1811 (2020). <https://doi.org/10.1108/ijppm-10-2019-0489>
10. Tenggono, E., Soetjipto, B., & Sudhartio, L.: Dynamic managerial capabilities in action: advancing strategic agility and digital readiness in healthcare organizations. *Journal of Organizational Change Management* (2025). <https://doi.org/10.1108/jocm-12-2024-0772>
11. Ercantan, K., Eyupoglu, S., & Ercantan, Ö.: The Entrepreneurial Leadership, Innovative Behaviour, and Competitive Advantage Relationship in Manufacturing Companies: A Key to Manufactural Development and Sustainable Business. *Sustainability* (2024). <https://doi.org/10.3390/su16062407>
12. Hermundsottir, F., & Aspelund, A.: Sustainability innovations and firm competitiveness: A review. *Journal of Cleaner Production*, 280, 124715 (2021). <https://doi.org/10.1016/j.jclepro.2020.124715>
13. Achi, A., Adeola, O., & Achi, F.: CSR and green process innovation as antecedents of micro, small, and medium enterprise performance: Moderating role of perceived environmental volatility. *Journal of Business Research* (2022). <https://doi.org/10.1016/j.jbusres.2021.10.016>
14. Mondal, S., Singh, S., & Gupta, H.: Green entrepreneurship and digitalization enabling the circular economy through sustainable waste management - An exploratory study of emerging economy. *Journal of Cleaner Production* (2023). <https://doi.org/10.1016/j.jclepro.2023.138433>

15. Anser, M., Yousaf, Z., Majid, A., & Yasir, M.: Does corporate social responsibility commitment and participation predict environmental and social performance? *Corporate Social Responsibility and Environmental Management* (2020). <https://doi.org/10.1002/csr.1977>
16. Nica, I., Chiriță, N., & Georgescu, I.: Triple Bottom Line in Sustainable Development: A Comprehensive Bibliometric Analysis. *Sustainability* (2025). <https://doi.org/10.3390/su17051932>
17. Aslam, M., Ahmad, B., & Rasheed, T.: Navigating the Impact of Green Innovation, Technological Linkages, and Knowledge Management on Sustainable Performance of SMEs. *Journal of International Entrepreneurship* (2025). <https://doi.org/10.1007/s10843-024-00371-8>
18. Lita, R., Faisal, R., & Meuthia, M.: Enhancing small and medium enterprises performance through innovation in Indonesia. *Journal of Hospitality and Tourism Technology*, 11, 155–176 (2020). <https://doi.org/10.1108/jhtt-11-2017-0124>
19. Putra, K., Prasetya, H., Chistiano, W., & Handayani, L.: Audience Participation in Virtual Wayang Performances of Post-Pandemic Covid – 19 in Indonesia. *Dirasat: Human and Social Sciences* (2025). <https://doi.org/10.35516/hum.v52i3.5213>
20. Prayag, G., Chowdhury, M., & Ozanne, L.: Dynamic, technological and marketing capabilities in MSMEs' recovery from COVID-19 – the moderating role of organizational learning. *Asia Pacific Journal of Marketing and Logistics* (2024). <https://doi.org/10.1108/apjml-08-2023-0744>
21. Mohamad, A., Afsheen, S., Yusoff, W., Rashid, U., & Sufter, N.: Green Process Innovation Reflecting Corporate Sustainability and Financial Performance: Malaysian Public Listed Companies. *Journal of Advanced Research in Applied Sciences and Engineering Technology* (2025). <https://doi.org/10.37934/araset.65.1.185196>
22. Moonpa, K., Udchachon, M., Jainanta, J., & Kanthata, S.: Microbial Carbonates of Upper Triassic Doi Long Formation, Lampang Group: A Study of New Outcrop Localities in Northern Lampang, Central North Thailand. *Diversity* (2025). <https://doi.org/10.3390/d17040299>
23. Martínez-Peláez, R., Ochoa-Brust, A., Rivera, S., Félix, V., Ostos, R., Brito, H., Félix, R., & Mena, L.: Role of Digital Transformation for Achieving Sustainability: Mediated Role of Stakeholders, Key Capabilities, and Technology. *Sustainability* (2023). <https://doi.org/10.3390/su151411221>
24. Mukherjee, S.: Theory of Statistical Inference. *Journal of the American Statistical Association*, 119, 1689–1690 (2024). <https://doi.org/10.1080/01621459.2024.2314719>
25. Zhang, Z., Dai, J., & Yang, Z.: Randomized statistical inference: A unified statistical inference frame of frequentist, fiducial, and Bayesian inference. *Science China Mathematics*, 63, 1007–1028 (2020). <https://doi.org/10.1007/s11425-017-9325-9>
26. Leong, L., Hew, T., Ooi, K., Tan, G., & Koohang, A.: An SEM-ANN Approach - Guidelines in Information Systems Research. *Journal of Computer Information Systems* (2024). <https://doi.org/10.1080/08874417.2024.2329128>
27. Weiss, L., & Kanbach, D.: Leveraging new business innovation for strategic renewal: An organizational framework for strategic corporate venturing. *Creativity and Innovation Management* (2023). <https://doi.org/10.1111/caim.12553>
28. Yuan, B., & Cao, X.: Do corporate social responsibility practices contribute to green innovation? The mediating role of green dynamic capability. *Technology in Society* (2022). <https://doi.org/10.1016/j.techsoc.2022.101868>

29. Tjahjadi, B., Soewarno, N., & Mustikaningtiyas, F.: Good corporate governance and corporate sustainability performance in Indonesia: A triple bottom line approach. *Heliyon*, 7 (2021). <https://doi.org/10.1016/j.heliyon.2021.e06453>
30. Sarstedt, M., Hair, J., Nitzl, C., Ringle, C., & Howard, M.: Beyond a tandem analysis of SEM and PROCESS: Use of PLS-SEM for mediation analyses! *International Journal of Market Research*, 62, 288–299 (2020). <https://doi.org/10.1177/1470785320915686>
31. Hair Jr., J.-F., Black, W. C., Babin, B. J., & Anderson, R. E.: *Multivariate Data Analysis*, 8th ed. Cengage Learning (2019).
32. Cronbach, L. J.: Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297–334 (1951).
33. Fornell, C., & Larcker, D. F.: Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50 (1981).

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

