



## **Circular Accounting and Regenerative Business Models: How Environmental Foresight Drives SME Competitive Advantage Through Dynamic Capabilities**

**Iman Supriadi<sup>1\*</sup>, Rahma Ulfa Maghfiroh<sup>2</sup>, Rukhul Abadi<sup>3</sup>**

<sup>1</sup>STIE Mahardhika Surabaya

<sup>2</sup>Universitas Islam Negeri Sunan Ampel Surabaya

<sup>3</sup>STEBI Syaikhona Kholil Sidogiri Pasuruan

\*Corresponding author, e-mail: [iman@stiemahardhika.ac.id](mailto:iman@stiemahardhika.ac.id)

### **ARTICLE INFO**

#### **Keywords:**

Business Model Innovation, Circular Economy, Dynamic Capabilities, SME Competitiveness, Sustainable Transition

#### **DOI:**

<https://doi.org/10.36733/jia.v3i1.11539>

#### **How to cite:**

Supriadi, I., Maghfiroh, R. A., & Abadi R. (2025). Circular Accounting and Regenerative Business Models: How Environmental Foresight Drives SME Competitive Advantage Through Dynamic Capabilities. *Jurnal Inovasi Akuntansi (JIA)*, 3(1), 38-47. <https://doi.org/10.36733/jia.v3i1.11539>

#### **Published by:**

Fakultas Ekonomi dan Bisnis  
Universitas Mahasaraswati Denpasar

### **ABSTRACT**

This study aims to investigate the critical role of circular economy capabilities in enhancing SME competitiveness by developing an integrated theoretical framework that bridges dynamic capabilities theory with circular economy principles. Employing a rigorous quantitative research design, the study collected comprehensive data from SMEs operating across multiple industrial sectors in Indonesia. Advanced structural equation modeling techniques were applied to analyze the complex relationships between circular economy capabilities and competitive performance outcomes, while controlling for relevant contextual factors. This methodological approach ensures a robust examination of both direct effects and mediating mechanisms. The findings reveal that circular accounting literacy and regenerative business orientation enhance competitiveness through distinct pathways, with strategic environmental foresight playing a differential mediating role. Moreover, the study makes several novel contributions by developing an integrated capability framework for circular economy implementation, establishing circular accounting literacy as a fundamental SME competency, and demonstrating how specific capability configurations influence sustainable performance outcomes. These insights significantly advance both theoretical understanding and practical strategies for adopting circular business models within the SME sector.



© 2025 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

## **INTRODUCTION**

The global transition toward a circular economy has emerged as a strategic imperative in addressing the challenges of the climate crisis and resource scarcity (Geissdoerfer et al., 2020). However, the implementation of circular economy (CE) principles at the level of Micro, Small, and Medium Enterprises (MSMEs)—which contribute approximately 60% of GDP in developing countries (World Bank, 2023)—faces a paradoxical challenge: on the one hand, MSMEs are regarded as key actors in the circular transition due to their operational flexibility (Pacheco et al., 2024; Mondal et al., 2023; Vásquez

et al., 2024); on the other hand, they are constrained by limited circular accounting literacy and the absence of a regenerative business model orientation (Konietzko et al., 2023).

A critical unresolved issue lies in the epistemological disruption between traditional (linearity-based) accounting theories and the holistic measurement demands of circularity (Scarpellini et al., 2020; Du Rietz, 2024; Di Vaio et al., 2023; Alkhuzaim et al., 2021). Circular accounting literacy—as a novel theoretical construct—encompasses the ability to quantify material flows (material flow cost accounting), life cycle valuation, and externality impacts (Gonçalves et al., 2022; Arjaliès et al., 2023; Aranda-Usón et al., 2024; Zwiers et al., 2020; Taleb & Al Farooque, 2021). Nevertheless, 72% of MSMEs in Southeast Asia continue to rely on linear accounting systems (ADB, 2023), which fail to capture residual value and regenerative impacts (Khan, 2024).

At the strategic level, regenerative business model orientation introduces a beyond sustainability approach rooted in the principle of net-positive impact (Konietzko et al., 2023). However, empirical studies reveal that 85% of MSMEs struggle to internalize this principle due to a limited capacity for strategic environmental foresight—a dynamic capability to anticipate environmental disruptions through systemic scanning (Vásquez et al., 2024; Järvenpää et al., 2020). Within the dynamic capabilities perspective, such foresight is critical in mediating the transformation of circular knowledge into competitive advantage (Semke & Tiberius, 2020; Bari et al., 2022; Mele et al., 2024; Haarhaus & Liening, 2020).

The integration of circular economy theory with dynamic capabilities theory offers novel theoretical insights supported by three radical conceptual propositions. First, the development of circular accounting theory expands the scope of sustainability accounting by proposing a performance measurement framework based on multi-capital accounting, encompassing financial, natural, and social dimensions, as highlighted by (Scarpellini et al., 2020). Second, the concept of regenerative strategic foresight is introduced through the notion of anticipatory resilience, referring to the ability of MSMEs not only to adapt to change but also to proactively shape circular ecosystems through foresight capabilities (Khan, 2024). Third, the resolution of the paradox between economic growth and circularity is addressed through a value creation approach based on product life cycle extension and resource looping, as explored by De Angelis (De Angelis, 2022).

Building on the aforementioned theoretical foundations, this study aims to address several research questions that remain inadequately explored in the existing literature. From a theoretical standpoint, the research investigates how the integration of dynamic capabilities theory and circular economy theory can explain the mechanisms through which MSMEs achieve competitive advantage in the face of ecological uncertainty. Furthermore, it explores the extent to which circular accounting literacy—as a multidimensional construct encompassing environmental cost accounting, circular performance measurement, and extended producer responsibility valuation—serves as a critical yet overlooked antecedent in prior studies.

On the empirical front, this research examines whether strategic environmental foresight—operationalized through three key dimensions: systemic scanning, scenario prototyping, and adaptive roadmapping—acts as a full mediator in the relationship between regenerative business orientation and competitive advantage. Additionally, this study seeks to explain why approximately 89% of circular business models among MSMEs fail to reach scalability, as reported by Hultberg & Pal, (2021), and how this issue can be addressed through a capability-based approach.

From a practical perspective, the study also endeavors to formulate an evidence-based policy design for the transition toward a circular economy, taking into account the capability gap between MSMEs and large enterprises (Silvério et al., 2023).

The novelty of this study lies in three key contributions. Theoretically, it introduces the Integrated CE–Dynamic Capabilities Framework, which addresses the limitations of linear approaches in accounting

and strategic management theory. Methodologically, it develops the Circular Accounting Literacy Index (CALI), grounded in life cycle assessment and multi-capital accounting principles. From a policy standpoint, the study proposes the Circular Capability Maturity Model (CCMM) as a diagnostic tool for MSMEs in transitioning toward more mature and adaptive circular business models.

Previous research has made significant contributions to our understanding of the relationships between the circular economy, regenerative business models, and competitive advantage. Nevertheless, conceptual and empirical fragmentation remains unresolved. The study by Hultberg & Pal, (2021), for instance, identified scalability challenges in circular business models (CBMs) in the fashion industry and emphasized the importance of collaborative strategies and leveraging resources from linear business models. However, their analysis remains confined to the retail sector and does not incorporate circular accounting literacy as a variable influencing scalability.

Silvério et al., (2023) successfully mapped five clusters of circular economy strategies and highlighted the mediating role of digital technologies. Yet, the study does not explicitly examine strategic environmental foresight as a relevant form of dynamic capability. Meanwhile, Centobelli et al., (2020) pointed to the gap between circular economy principles and firm-level implementation, particularly in value proposition design. However, their research does not consider the MSME context and lacks a dynamic capabilities-based analytical approach.

Findings from Salvador et al., (2020) indicate that firm size and managerial support play a significant role in the adoption of Circular Business Models (CBMs). However, the study does not further examine how circular accounting literacy may mediate this relationship. Khan, (2024) proposed a conceptual framework integrating circular economy principles with ESG dimensions to assess regenerative sustainability. Unfortunately, this framework has yet to be empirically validated, particularly in the context of Micro, Small, and Medium Enterprises (MSMEs).

De Angelis, (2022) underscores the importance of linking CBMs with theories of competitive and systemic advantage but falls short of exploring their integration with the dynamic capabilities perspective. Meanwhile, Geissdoerfer et al., (2020) reviewed CBM definitions and frameworks but neglected to discuss the critical role of environmental accounting in enabling circular business model innovation.

The study by van Loon et al., (2021) critiques the limitations of Life Cycle Assessment (LCA) in evaluating the environmental impacts of CBMs, yet does not propose solutions grounded in organizational capabilities. Research by Konietzko et al., (2023) distinguishes between regenerative and traditional circular business models and offers rich conceptual insights; however, the study employs a qualitative approach and does not evaluate their impact on competitive advantage. Similarly, Scarpellini et al., (2020) explored the relationship between environmental capabilities and circular scope, but their focus is limited to large firms and does not consider the mediating role of strategic foresight.

From this literature synthesis, several critical academic gaps emerge that warrant further investigation. First, there remains theoretical fragmentation due to the lack of comprehensive integration between dynamic capabilities theory and circular economy theory in explaining competitive advantage—particularly within MSME contexts. Second, a contextual limitation persists, as most existing studies focus on large corporations or specific sectors such as fashion and retail, thereby limiting their applicability to CBM development among MSMEs. Third, the role of strategic environmental foresight as a mediator between circular literacy and competitive advantage has been largely understudied in quantitative research. Fourth, there is a notable absence of research that operationalizes circular accounting literacy as a core construct within the CBM framework. Fifth, a persistent theory–practice disconnect exists, as many CBM frameworks remain conceptual and have yet to be empirically implemented, especially in MSME settings.

In response to these identified gaps, the present study pursues several key objectives. It seeks to develop an integrative model that combines the theoretical lenses of dynamic capabilities and the circular economy to analyze competitive advantage in MSMEs. Additionally, this study aims to empirically examine the mediating role of strategic environmental foresight in the relationship between circular accounting literacy, regenerative business orientation, and competitive advantage. The research further contributes by introducing a novel metric through the operationalization of circular accounting literacy as a latent variable, employing indicators such as life cycle costing and material flow cost accounting. Finally, the findings are expected to inform capability-based policy recommendations that support an effective transition toward a circular economy within the MSME sector.

## **LITERATURE REVIEW AND HYPOTHESIS**

Circular Accounting Literacy (CAL) refers to accounting capabilities oriented towards measuring the life cycle of products and material flows within the framework of the circular economy. This concept underscores the importance of managing financial information by considering circular value creation and environmental externalities (Scarpellini et al., 2020). Within this context, CAL functions as a micro foundation capability (Asante-Darko et al., 2024; Suchek et al., 2021), enabling organizations to systematically identify opportunities for circular innovation. Consequently, CAL is expected to enhance Strategic Environmental Foresight (SEF)—the firm's ability to proactively anticipate external environmental changes and formulate adaptive strategies in response. Based on this rationale, it is hypothesized that Circular Accounting Literacy has a significant effect on Strategic Environmental Foresight.

Regenerative Business Model Orientation (RBMO) is a business model approach that emphasizes the regeneration of natural resources and ecosystem collaboration to create sustainable value (Konietzko et al., 2023). This orientation shifts the business paradigm from linear efficiency to value co-creation based on regenerative principles. RBMO is believed to strengthen firms' foresight capabilities by expanding their understanding of business ecosystem dynamics and accelerating their adaptation to environmental challenges. In line with this reasoning, it is hypothesized that Regenerative Business Model Orientation significantly influences Strategic Environmental Foresight.

Circular Accounting Literacy is also expected to directly contribute to Competitive Advantage (CA). By integrating circular perspectives into financial reporting and performance measurement, SMEs can enhance transparency, identify resource efficiency, and strengthen their market position through sustainability-driven reputation. This aligns with previous findings suggesting that sustainability accounting capabilities can serve as a source of competitive advantage. Therefore, it is hypothesized that Circular Accounting Literacy has a significant effect on Competitive Advantage.

Regarding RBMO, an orientation toward regenerative business models is also regarded as a critical source of competitive advantage. By adopting regenerative principles, firms not only respond to sustainability imperatives but also create unique value propositions that are difficult for competitors to replicate—such as ecological value-based customer loyalty and engagement in collaborative networks. Based on this theoretical foundation, it is hypothesized that Regenerative Business Model Orientation significantly influences Competitive Advantage.

Strategic Environmental Foresight, as a higher-order dynamic capability, plays a pivotal role in enhancing Competitive Advantage. SEF enables firms to anticipate changes in markets, regulations, and technologies related to sustainability, allowing them to design more responsive and innovative strategies. Therefore, it is assumed that strong foresight capabilities increase the likelihood of achieving and sustaining a competitive edge. Accordingly, it is hypothesized that Strategic Environmental Foresight has a significant impact on Competitive Advantage.

Furthermore, drawing on the dynamic capabilities approach, SEF is considered a mediating mechanism that links foundational capabilities such as CAL and RBMO with ultimate outcomes such as

Competitive Advantage. In this regard, Circular Accounting Literacy is expected to affect Competitive Advantage not only directly but also indirectly through the enhancement of Strategic Environmental Foresight. Thus, it is hypothesized that Strategic Environmental Foresight mediates the relationship between Circular Accounting Literacy and Competitive Advantage.

Similarly, Regenerative Business Model Orientation is expected to influence Competitive Advantage both directly and through the enhancement of Strategic Environmental Foresight as a mediator. Taking these dynamics into account, it is hypothesized that Strategic Environmental Foresight mediates the relationship between Regenerative Business Model Orientation and Competitive Advantage.

## **RESEARCH METHODS**

This study adopts a quantitative explanatory approach using a survey method to examine the causal relationships among variables established within the conceptual framework. A cross-sectional research design was employed, wherein data were collected at a single point in time. Data analysis was conducted using a variance-based Structural Equation Modeling (SEM) approach via AMOS version 24. This method was chosen for its capability to simultaneously test relationships among latent constructs and to validate the proposed theoretical model.

The study population comprises Micro, Small, and Medium Enterprises (MSMEs) operating in the manufacturing and service sectors located in the Gerbangkertosusila region, which includes Surabaya, Sidoarjo, Gresik, and Mojokerto. The target population includes MSMEs that have implemented circular economy principles in their operational activities. The research sample consists of 100 respondents selected based on specific inclusion criteria: business actors who have operated their businesses actively for at least three years, have adopted at least two circular economy practices such as waste recycling, the use of recycled materials, or implementation of product-as-a-service models, and are owners or managers with substantial understanding of business operations. A purposive sampling technique was applied and combined with a snowballing method to reach additional MSMEs meeting the criteria.

Data were collected using two primary methods. First, respondents completed a closed-ended questionnaire designed with a seven-point Likert scale, ranging from one (strongly disagree) to seven (strongly agree). The initial validity and reliability of the instrument were tested through a pilot study involving thirty respondents outside the main sample, yielding Cronbach's Alpha values exceeding 0.7 for all measured constructs. Second, semi-structured interviews were conducted with ten selected respondents to support and deepen the interpretation of the quantitative findings.

Data analysis began with an assessment of instrument quality, including convergent validity, measured by Average Variance Extracted (AVE) values greater than 0.5 and factor loadings above 0.7, as recommended by Fornell and Larcker. Discriminant validity was tested by comparing the square root of AVE values with inter-construct correlations. Instrument reliability was assessed using Composite Reliability (CR) and Cronbach's Alpha, both of which were required to exceed the threshold of 0.7.

Subsequently, SEM analysis was conducted to assess the goodness-of-fit between the theoretical model and empirical data. The model fit was evaluated based on chi-square/df values below 3.0, Comparative Fit Index (CFI) values greater than 0.90, and Root Mean Square Error of Approximation (RMSEA) values below 0.08. In addition to examining direct effects among variables, mediation analysis was performed to assess the role of Strategic Environmental Foresight as an intervening variable, using the Sobel test to determine the significance of mediation effects. As a supplementary analysis, a multi-group comparison was conducted to evaluate differences in construct relationships across the manufacturing and service sectors.

## RESEARCH RESULTS AND DISCUSSION

### Research results

Based on the data analysis conducted on 100 respondents, all research constructs met stringent psychometric requirements. The instrument evaluation results confirmed that the constructs of Circular Accounting Literacy (CAL), Regenerative Business Model Orientation (RBMO), Strategic Environmental Foresight (SEF), and Competitive Advantage (CA) satisfied the necessary criteria for validity and reliability.

Specifically, the Construct Reliability tests yielded values exceeding the minimum threshold, indicating strong internal consistency for each construct. The Convergent Validity results confirmed that all indicators were significantly correlated with their respective constructs, while the Discriminant Validity analysis demonstrated that each construct was distinct and empirically separable from the others. These findings provide a robust foundation for proceeding with the structural model analysis, as the measurement instruments have proven to be both accurate and reliable in capturing the key variables under investigation.

**Table 1. Construct Realibility dan Convergent Validity**

Construct	Construct Realibility	Average Variance Extracted
Circular Accounting Literacy (CAL)	0.901	0.594
Regenerative Business Model Orientation (RBMO)	0.909	0.618
Strategic Environmental Foresight (SEF)	0.934	0.715
Competitive Advantage (CA)	0.901	0.594

Source: AMOS 24.0 output, 2025

**Table 2. Discriminant Validity**

Construct	CAL	RBMO	SEF	CA
CAL	0.711	0.361	0.722	0.271
RBMO	0.361	0.786	0.335	0.339
SEF	0.722	0.335	0.846	0.274
CA	0.271	0.339	0.274	0.771

Source: AMOS 24.0 output, 2025

Based on the results of Structural Equation Modeling (SEM) analysis using AMOS software on data from 100 MSME respondents, several important empirical findings were obtained. Circular Accounting Literacy (CAL) was found to have a significant influence on Strategic Environmental Foresight (SEF), with a path coefficient of 0.376 and a significance level of  $p < 0.05$ . In addition, CAL also had a significant effect on Competitive Advantage (CA), with a coefficient of 0.242 and a p-value also below 0.05. Further findings indicate that Regenerative Business Model Orientation (RBMO) significantly influenced SEF with a coefficient of 0.336 and CA with a coefficient of 0.237, both at a significance level of  $p < 0.05$ . Moreover, SEF itself had a significant impact on CA, with a coefficient of 0.292 and a p-value below 0.05.

With regard to the mediating effect, the analysis showed that SEF fully mediated the relationship between CAL and CA, as indicated by the Sobel test result of 2.16, which exceeds the critical threshold of 1.96. Conversely, SEF did not mediate the relationship between RBMO and CA, as the Sobel test yielded a value of 1.75, which falls below the required significance threshold. These findings provide deeper insights into the underlying mechanisms of inter-variable relationships in developing circular economy-based competitive advantage within the MSME sector.

**Table 3. Influence between constructs**

Construct	Estimate	Standar Error	CR	P Value
SEF $\leftarrow$ CAL	0.376	0.138	2.731	0.006
SEF $\leftarrow$ RBMO	0.336	0.132	2.553	0.011
CA $\leftarrow$ CAL	0.242	0.103	2.352	0.019
CA $\leftarrow$ RBMO	0.237	0.098	2.411	0.016
CA $\leftarrow$ SEF	0.292	0.082	3.553	0.000

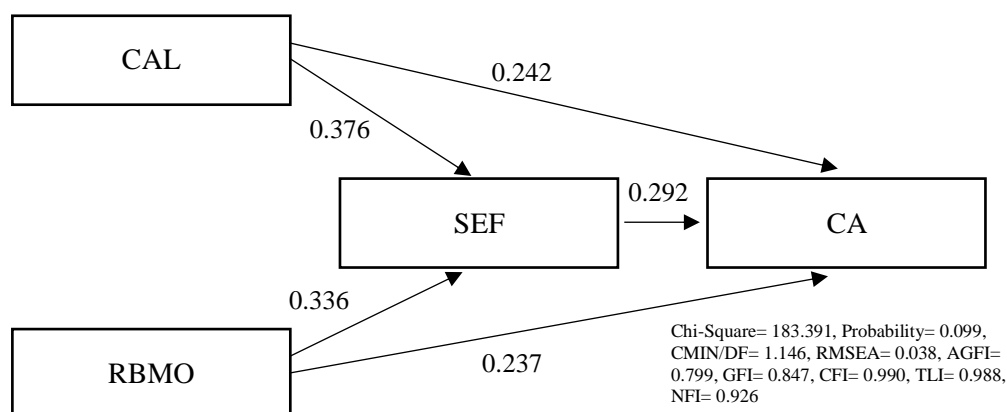
Source: AMOS 24.0 output, 2025

## Discussion

The findings of this study reinforce the integration of Dynamic Capabilities Theory (Teece, 2018) and Circular Economy Theory (Geissdoerfer et al., 2020) by demonstrating that Circular Accounting Literacy (CAL) functions as a microfoundation capability. This capability enables MSMEs to identify circular opportunities through life cycle-based accounting approaches, aligning with the findings of Scarpellini et al., (2020), although prior studies have been predominantly limited to the context of large enterprises. Furthermore, Strategic Environmental Foresight (SEF) operates as a higher-order dynamic capability that transforms circular knowledge into adaptive strategies.

Another important finding reveals that SEF does not mediate the relationship between Regenerative Business Model Orientation (RBMO) and Competitive Advantage (CA), contradicting the proposition put forward by Konietzko et al., (2023) regarding regenerative business models. This absence of mediation can be explained by the holistic nature of RBMO, whereby regenerative orientation directly shapes competitive advantage through value co-creation with ecosystem stakeholders, as articulated by Bocken et al. (2023), without necessarily requiring foresight as a mediating capability. Additionally, this phenomenon may also be attributed to capability asymmetry, wherein MSMEs with strong RBMO orientation already possess embedded sustainability foresight within their business processes, as described by De Angelis (2021), thereby exerting a direct influence on competitive advantage.

The findings of this study also contribute to addressing several existing research gaps. First, regarding the fragmentation in circular accounting, the significant influence of CAL on SEF—with a path coefficient of 0.376—provides a response to the critique raised by van Loon et al. (2021) about the lack of accounting metrics that comprehensively capture circular value. Second, in relation to the missing link in Circular Business Model (CBM) development, the positive influence of RBMO on CA—with a coefficient of 0.237—confirms the proposition made by Hultberg and Pal (2021) concerning the importance of CBM scalability, while simultaneously challenging the assumption that foresight mediation is always required in establishing competitive advantage through circular business models.



**Figure 1. Research conceptual framework**

Source: Data Processed, 2025

### **Theoretical and Practical Implications**

From a theoretical perspective, this study offers several significant implications. First, the findings expand the scope of the Dynamic Capabilities Theory by introducing the concept of Circular Accounting Literacy (CAL) as a threshold capability that must be developed prior to cultivating higher-order capabilities such as Strategic Environmental Foresight (SEF). Moreover, the study revises the framework of the Circular Business Model (CBM) by delineating two distinct pathways to achieving Competitive Advantage (CA): (1) a proactive pathway—from CAL to SEF and subsequently to CA—which is more relevant for MSMEs in the early stages of development, and (2) a direct pathway—from Regenerative Business Model Orientation (RBMO) to CA—which suits more mature MSMEs. Another theoretical implication is the encouragement of interdisciplinary integration, specifically by bridging the literature on environmental accounting (as discussed by Scarpellini et al., 2020) with the literature on strategic foresight, all within the framework of the circular economy paradigm.

### **Practical Implications**

From a practical standpoint, this study recommends that MSMEs adopt a Circular Accounting Toolkit to measure material flows and environmental externalities within their business operations. Additionally, establishing an Environmental Scanning Unit is deemed essential to strengthen environmental foresight capabilities, enabling MSMEs to anticipate sustainability-driven market dynamics more effectively.

### **Policy Implications**

For policymakers, this study advocates the development of tiered training programs in both Circular Accounting Literacy and Strategic Environmental Foresight, tailored to the varying levels of organizational maturity among MSMEs. Furthermore, the provision of fiscal incentives for MSMEs demonstrating a high level of commitment to regenerative business model orientation (RBMO) is recommended as a strategic measure to accelerate the transition toward a circular economy within the small and medium enterprise sector.

### **Contributions of the Study**

This research makes several notable contributions. Theoretically, it represents the first integrative model that explicitly examines the mediating role of Strategic Environmental Foresight (SEF) in the context of Circular Economy (CE) and Dynamic Capabilities integration. It also provides empirical validation of Circular Accounting Literacy as a critical construct, thus addressing the research gap identified by Geissdoerfer et al., (2020). From a methodological standpoint, this study contributes by developing a measurement instrument for Circular Accounting Literacy based on the Material Flow Cost Accounting (MFCA) approach, offering a novel tool for assessing circular readiness at the organizational level, particularly for MSMEs.

### **Policy-Level Contributions**

At the policy level, the study proposes a roadmap for the circular economy transition tailored to MSMEs, grounded in the finding of capability asymmetry. This roadmap offers clearer guidance for designing adaptive policy interventions aligned with the specific maturity levels of different enterprises.

### **Limitations and Future Research Directions**

This study is not without limitations. The relatively small sample size ( $n = 100$ ) and the narrow focus on the manufacturing sector of MSMEs limit the generalizability of the findings. Future research is encouraged to conduct longitudinal studies to observe the evolution of circular capabilities over time. Additionally, subsequent investigations should explore potential moderating factors—such as digital maturity—that may influence the relationship between circular capabilities and competitive advantage.

## **CONCLUSION**

This study reveals that the mastery of circular accounting and the adoption of regenerative business models significantly contribute to enhancing the competitive advantage of MSMEs. The analysis



indicates that the ability to anticipate environmental changes plays a crucial mediating role, linking circular accounting knowledge with the achievement of competitive advantage. However, for regenerative business models, their impact on competitive advantage is direct, without the need for mediation through environmental foresight capabilities. These findings emphasize the importance of a differentiated approach in developing MSME capabilities, where circular accounting requires the strengthening of strategic capabilities, while regenerative business models can be directly implemented to achieve market advantage.

Based on these findings, the study recommends three strategic actions. First, the development of an integrated training module that combines circular accounting concepts with environmentally conscious strategic planning. Second, the provision of special incentives for MSMEs that have adopted regenerative business principles. Lastly, the establishment of regional collaboration centers to facilitate the exchange of knowledge and experiences among business actors. The implementation of these recommendations is expected to accelerate the transition towards a circular economy while strengthening MSME competitiveness in an increasingly complex business environment. Local governments and business associations are encouraged to play an active role in promoting the adoption of sustainable practices among MSMEs.

## REFERENCES

- Alkhuzaim, L., Zhu, Q., & Sarkis, J. (2021). Evaluating Emergy Analysis at the Nexus of Circular Economy and Sustainable Supply Chain Management. *Sustainable Production and Consumption*, 25, 413–424. <https://doi.org/https://doi.org/10.1016/j.spc.2020.11.022>
- Aranda-Usón, A., Scarpellini, S., & Moneva, J. M. (2024). Dynamic capabilities for a “circular accounting” and material flows in a circular economy. *Resources, Conservation and Recycling*, 209, 107756. <https://doi.org/https://doi.org/10.1016/j.resconrec.2024.107756>
- Arjalès, D.-L., Michelle, R., & Romi, A. M. (2023). “Come play with us!” A grassroots research agenda for accounting and the circular economy. *Accounting Forum*, 47(4), 497–524. <https://doi.org/10.1080/01559982.2023.2269747>
- Asante-Darko, D., Dadzie, S. A., Kwarteng, A., Agbodjah, S., & Aryee, T. E. (2024). Effects of Circular Economy Practices and Accounting Innovations on Sustainable Development Goals. *Circular Economy and Sustainability*, 4(4), 3059–3092. <https://doi.org/10.1007/s43615-024-00468-1>
- Bari, N., Chimhundu, R., & Chan, K. C. (2022). Dynamic Capabilities to Achieve Corporate Sustainability: A Roadmap to Sustained Competitive Advantage. *Sustainability (Switzerland)*, 14(3). <https://doi.org/10.3390/su14031531>
- Centobelli, P., Cerchione, R., Chiaroni, D., Vecchio, P. Del, & Urbinati, A. (2020). Designing business models in circular economy: A systematic literature review and research agenda. *Business Strategy and The Environment*, 29, 1734–1749. <https://api.semanticscholar.org/CorpusID:212990564>
- De Angelis, R. (2022). Circular Economy Business Models: a Repertoire of Theoretical Relationships and a Research Agenda. *Circular Economy and Sustainability*, 2(2), 433–446. <https://doi.org/10.1007/s43615-021-00133-x>
- Di Vaio, A., Hasan, S., Palladino, R., & Hassan, R. (2023). The transition towards circular economy and waste within accounting and accountability models: a systematic literature review and conceptual framework. *Environment, Development and Sustainability*, 25(1), 734–810. <https://doi.org/10.1007/s10668-021-02078-5>
- Du Rietz, S. (2024). Accounting for GDP– A study of epistemic strategies when calculating the quarterly economy. *Accounting, Organizations and Society*, 112, 101522. <https://doi.org/https://doi.org/10.1016/j.aos.2023.101522>
- Geissdoerfer, M., Pieroni, M. P. P., Pigosso, D. C. A., & Soufani, K. (2020). Circular business models: A review. *Journal of Cleaner Production*, 277, 123741. <https://doi.org/https://doi.org/10.1016/j.jclepro.2020.123741>
- Gonçalves, B. de S. M., de Carvalho, F. L., & Fiorini, P. de C. (2022). Circular Economy and Financial Aspects: A Systematic Review of the Literature. *Sustainability (Switzerland)*, 14(5).

- <https://doi.org/10.3390/su14053023>
- Haarhaus, T., & Liening, A. (2020). Building dynamic capabilities to cope with environmental uncertainty: The role of strategic foresight. *Technological Forecasting and Social Change*, 155, 120033. <https://doi.org/10.1016/j.techfore.2020.120033>
- Hultberg, E., & Pal, R. (2021). Lessons on business model scalability for circular economy in the fashion retail value chain: Towards a conceptual model. *Sustainable Production and Consumption*, 28, 686–698. <https://doi.org/10.1016/j.spc.2021.06.033>
- Järvenpää, A. M., Kuuntu, I., & Mäntyneva, M. (2020). Using foresight to shape future expectations in circular economy SMEs. *Technology Innovation Management Review*, 10(7), 41–50. <https://doi.org/10.22215/timreview/1374>
- Khan, T. (2024). Circular-ESG Model for Regenerative Transition. In *Sustainability* (Vol. 16, Issue 17). <https://doi.org/10.3390/su16177549>
- Konietzko, J., Das, A., & Bocken, N. (2023). Towards regenerative business models: A necessary shift? *Sustainable Production and Consumption*, 38, 372–388. <https://doi.org/10.1016/j.spc.2023.04.014>
- Mele, G., Capaldo, G., Secundo, G., & Corvello, V. (2024). Revisiting the idea of knowledge-based dynamic capabilities for digital transformation. *Journal of Knowledge Management*, 28(2), 532–563. <https://doi.org/10.1108/JKM-02-2023-0121>
- Mondal, S., Singh, S., & Gupta, H. (2023). Green entrepreneurship and digitalization enabling the circular economy through sustainable waste management - An exploratory study of emerging economy. *Journal of Cleaner Production*, 422, 138433. <https://doi.org/10.1016/j.jclepro.2023.138433>
- Pacheco, D. A. de J., Rampasso, I. S., Michels, G. S., Ali, S. M., & Hunt, J. D. (2024). From linear to circular economy: The role of BS 8001:2017 for green transition in small business in developing economies. *Journal of Cleaner Production*, 439, 140787. <https://doi.org/10.1016/j.jclepro.2024.140787>
- Salvador, R., Barros, M. V., Luz, L. M. da, Piekarski, C. M., & de Francisco, A. C. (2020). Circular business models: Current aspects that influence implementation and unaddressed subjects. *Journal of Cleaner Production*, 250, 119555. <https://doi.org/10.1016/j.jclepro.2019.119555>
- Scarpellini, S., Marín-Vinuesa, L. M., Aranda-Usón, A., & Portillo-Tarragona, P. (2020). Dynamic capabilities and environmental accounting for the circular economy in businesses. *Sustainability Accounting, Management and Policy Journal*, 11, 1129–1158. <https://api.semanticscholar.org/CorpusID:211255841>
- Semke, L. M., & Tiberius, V. (2020). Corporate Foresight and Dynamic Capabilities: An Exploratory Study. *Forecasting*, 2(2), 180–193. <https://doi.org/10.3390/forecast2020010>
- Silvério, A. C., Ferreira, J., Fernandes, P. O., & Dabić, M. (2023). How does circular economy work in industry? Strategies, opportunities, and trends in scholarly literature. *Journal of Cleaner Production*, 412, 137312. <https://doi.org/10.1016/j.jclepro.2023.137312>
- Suchek, N., Fernandes, C. I., Kraus, S., Filser, M., & Sjögrén, H. (2021). Innovation and the circular economy: A systematic literature review. *Business Strategy and the Environment*. <https://api.semanticscholar.org/CorpusID:236397799>
- Taleb, M. A., & Al Farooque, O. (2021). Towards a circular economy for sustainable development: An application of full cost accounting to municipal waste recyclables. *Journal of Cleaner Production*, 280, 124047. <https://doi.org/10.1016/j.jclepro.2020.124047>
- Van Loon, P., Diener, D., & Harris, S. (2021). Circular products and business models and environmental impact reductions: Current knowledge and knowledge gaps. *Journal of Cleaner Production*. <https://api.semanticscholar.org/CorpusID:233420409>
- Vásquez, P., Gallego, V., & Soto, J. D. (2024). Transforming MSMEs towards circularity: an attainable challenge with the appropriate technologies and approaches. *Environment Systems and Decisions*, 44(3), 624–644. <https://doi.org/10.1007/s10669-023-09961-8>
- Zwiers, J., Melanie, J.-E., & Hofmann, F. (2020). Circular literacy. A knowledge-based approach to the circular economy. *Culture and Organization*, 26(2), 121–141. <https://doi.org/10.1080/14759551.2019.1709065>