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The Role of the Circular Economy in Enhancing the Competitiveness of MSMEs

Syamsuri Widarman[1] Novita[2]
[1,2,] Fakultas Ekonomi, Ekonomi Bisnis, Universitas Katolik Parahyangan, Bandung, Indonesia

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ABSTRACT

The increasing demand for sustainable business practices has encouraged Micro, Small, and Medium Enterprises (MSMEs) to adopt circular economy principles as a strategy to improve long-term competitiveness. This study aims to analyze the role of the circular economy in enhancing the competitiveness of MSMEs through resource efficiency, waste reduction, innovation, and sustainable value creation. A quantitative research approach was employed using a survey of MSME owners and managers, with data analyzed through Structural Equation Modeling (SEM). The findings indicate that circular economy practices significantly improve operational efficiency, stimulate product and process innovation, strengthen market competitiveness, and enhance business sustainability. The study concludes that integrating circular economy principles into MSME operations represents an effective strategic approach for achieving competitive advantage while supporting sustainable economic development.

Corresponding Author:

Syamsuri Widarman,
Ekonomi Bisnis, Fakultas Ekonomi,
Universitas Katolik Parahyangan, Bandung, Indonesia,
Jl. Ciumbuleuit No. 94, Bandung, 40141, Indonesia.
Email: syamsuriwidarman@gmail.com

1. INTRODUCTION

Previous empirical studies have generally supported the positive relationship between circular economy practices and business performance. Several researchers found that circular economy implementation enhances operational efficiency by reducing material consumption and minimizing production waste. Other studies demonstrated that eco-innovation and sustainable product development improve customer satisfaction and brand reputation, thereby strengthening market competitiveness. Research on sustainable supply chain management further revealed that collaborative partnerships among suppliers, producers, and consumers facilitate resource optimization and improve organizational resilience. Nevertheless, numerous studies acknowledge that MSMEs often encounter barriers including inadequate technological capabilities, limited financial resources, insufficient managerial knowledge, and weak institutional support, which may hinder successful implementation of circular economy practices. Consequently, further investigation is necessary to determine whether the strategic benefits of circular economy outweigh these implementation challenges within the MSME context.

One of the most widely discussed approaches in sustainable business management is the Circular Economy (CE). Unlike the traditional linear economy, the circular economy emphasizes resource efficiency through waste reduction, product life extension, recycling, remanufacturing, and continuous value creation. Rather than treating waste as an unavoidable consequence of production, the circular economy considers waste as a valuable resource that can be reintegrated into production systems. This paradigm encourages enterprises to optimize resource utilization, reduce operational costs, improve environmental performance, and create innovative products and services that satisfy evolving market demands. For MSMEs, adopting circular economy principles is increasingly recognized as a strategic

opportunity to strengthen organizational resilience while enhancing competitive advantage through sustainable innovation, improved operational efficiency, and stronger stakeholder trust.

The growing emphasis on Environmental, Social, and Governance (ESG) practices has further accelerated the relevance of circular economy implementation among business organizations. Consumers are becoming more environmentally conscious, governments are introducing stricter environmental regulations, and investors increasingly favor firms demonstrating sustainable business practices. Consequently, MSMEs that integrate circular economy principles into their operations are expected not only to improve environmental performance but also to enhance their market competitiveness. Resource efficiency enables firms to reduce production costs, eco-innovation creates product differentiation, and sustainable business practices strengthen customer loyalty and corporate reputation. Therefore, understanding the relationship between circular economy adoption and MSME competitiveness has become increasingly important from both theoretical and practical perspectives.

Despite the growing body of literature examining circular economy implementation, several research gaps remain unresolved. Existing studies predominantly focus on large manufacturing firms, multinational corporations, or industrial sectors possessing relatively abundant financial, technological, and human resources. Comparatively fewer studies investigate the implementation of circular economy practices within MSMEs, particularly in developing economies where resource constraints, technological limitations, and institutional barriers significantly influence business performance. Moreover, previous research frequently evaluates circular economy implementation primarily from environmental or operational perspectives, such as waste reduction, recycling efficiency, and environmental performance. Limited attention has been devoted to examining how circular economy practices directly influence organizational competitiveness through multiple strategic dimensions including innovation capability, operational efficiency, customer satisfaction, market expansion, and long-term business sustainability.

Another limitation identified in previous literature concerns the fragmented examination of circular economy dimensions. Many empirical studies investigate isolated practices such as recycling, green production, or sustainable supply chains without considering circular economy as a comprehensive strategic framework encompassing resource optimization, product lifecycle management, reverse logistics, collaborative partnerships, and sustainable value creation. Furthermore, empirical findings regarding the impact of circular economy implementation on business competitiveness remain inconsistent. While several studies report positive effects on financial and operational performance, others argue that the implementation costs, technological investment requirements, and organizational readiness may reduce short-term competitiveness, particularly among resource-constrained MSMEs. These inconsistencies indicate the need for additional empirical investigation to provide a more comprehensive understanding of how circular economy adoption contributes to MSME competitiveness.

From a theoretical perspective, this study draws upon the Resource-Based View (RBV), Natural Resource-Based View (NRBV), and Circular Economy Theory. The Resource-Based View suggests that firms achieve sustainable competitive advantage by effectively utilizing valuable, rare, inimitable, and non-substitutable resources. Extending this perspective, the Natural Resource-Based View emphasizes environmental capabilities as strategic resources capable of generating long-term competitive advantage. Circular economy theory complements these perspectives by proposing that sustainable resource management, waste minimization, product redesign, recycling, and regenerative production systems enable organizations to create continuous economic value while preserving environmental resources. The integration of these theoretical perspectives suggests that MSMEs adopting circular economy principles are likely to strengthen internal capabilities, enhance innovation, improve operational efficiency, and ultimately increase organizational competitiveness.

Previous empirical studies have generally supported the positive relationship between circular economy practices and business performance. Several researchers found that circular economy implementation enhances operational efficiency by reducing material consumption and minimizing production waste. Other studies demonstrated that eco-innovation and sustainable product development improve customer satisfaction and brand reputation, thereby strengthening market competitiveness. Research on sustainable supply chain management further revealed that collaborative partnerships among suppliers, producers, and consumers facilitate resource optimization and improve organizational resilience. Nevertheless, numerous studies acknowledge that MSMEs often encounter barriers including inadequate technological capabilities, limited financial resources, insufficient managerial knowledge, and weak institutional support, which may hinder successful implementation of circular economy practices. Consequently, further investigation is necessary to determine whether the

strategic benefits of circular economy outweigh these implementation challenges within the MSME context.

The novelty of this research lies in its comprehensive examination of circular economy adoption as a strategic determinant of MSME competitiveness rather than solely as an environmental management initiative. Unlike previous studies that focus primarily on environmental outcomes or individual circular practices, this research conceptualizes the circular economy as a multidimensional construct encompassing resource efficiency, waste management, product lifecycle extension, recycling activities, sustainable innovation, and collaborative value creation. Furthermore, this study integrates economic, environmental, and strategic management perspectives to explain how circular economy implementation simultaneously improves operational efficiency, innovation capability, customer value, and sustainable competitive advantage. By focusing specifically on MSMEs, this study also contributes empirical evidence regarding the applicability of circular economy principles within organizations characterized by limited resources and high operational flexibility.

The objective of this research is to analyze the role of the circular economy in enhancing the competitiveness of MSMEs. Specifically, the study aims to examine the influence of circular economy practices on operational efficiency, innovation capability, market competitiveness, and sustainable business performance. Additionally, the research seeks to provide empirical evidence regarding the strategic value of circular economy adoption for MSMEs operating within increasingly competitive and environmentally conscious markets. The expected contributions of this study are both theoretical and practical. Theoretically, the research enriches the literature concerning sustainable business management by integrating Resource-Based View, Natural Resource-Based View, and Circular Economy Theory into a comprehensive framework explaining MSME competitiveness. It also contributes empirical evidence that expands current understanding of circular economy implementation within small business environments. Practically, the findings are expected to provide valuable insights for MSME owners, managers, policymakers, and business development institutions regarding effective strategies for implementing circular economy practices to strengthen competitiveness, improve resource efficiency, and achieve sustainable business growth. Furthermore, the results may support governments in designing policies and capacity-building programs that encourage wider adoption of circular economy principles among MSMEs.

2. RESEARCH METHOD

This study employed a quantitative research approach to examine the role of the circular economy in enhancing the competitiveness of Micro, Small, and Medium Enterprises (MSMEs). Data were collected through a structured questionnaire distributed to MSME owners and managers operating across various business sectors. Respondents were selected using purposive sampling, targeting enterprises that had implemented at least one circular economy practice, such as waste reduction, product reuse, recycling, or resource efficiency initiatives. The research instrument consisted of measurement items adapted from established literature and assessed using a five-point Likert scale. Prior to hypothesis testing, data quality was evaluated through validity and reliability tests, while the measurement model was assessed using convergent and discriminant validity. Structural relationships among variables were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), which is appropriate for predictive research involving latent constructs and complex relationships. The analysis examined the influence of circular economy practices on MSME competitiveness, including innovation capability, operational efficiency, market performance, and long-term business sustainability. This methodological approach provides robust empirical evidence regarding the strategic contribution of circular economy implementation to improving MSME competitiveness in an increasingly dynamic and sustainability-oriented business environment.

3. RESULTS AND DISCUSSIONS

3.1 Circular Economy Practices as a Driver of Operational Efficiency and Cost Reduction in MSMEs (≈390 words)

The findings indicate that the adoption of Circular Economy (CE) practices significantly improves the operational efficiency of Micro, Small, and Medium Enterprises (MSMEs). The empirical analysis demonstrates that enterprises implementing resource efficiency strategies, waste minimization, material recycling, product reuse, and environmentally responsible production experience lower operating costs and improved resource utilization compared to businesses relying on conventional

linear production systems. Respondents reported that optimizing raw material consumption and extending product life cycles reduced procurement expenses while simultaneously minimizing production waste. tatistical testing confirms that Circular Economy implementation has a positive and significant influence on operational performance. MSMEs practicing waste segregation, utilizing recyclable packaging, and recovering production by-products achieved higher productivity levels because fewer resources were required to produce comparable outputs. These improvements also enhanced inventory management, reduced unnecessary expenditures, and increased production flexibility. Consequently, firms became more resilient to fluctuations in raw material prices and supply chain disruptions.

The analysis further reveals that Circular Economy practices encourage innovation in production processes. Many MSMEs introduced redesigned products, adopted eco-friendly materials, and modified manufacturing methods to maximize resource efficiency. Such innovations generated additional business opportunities through secondary products derived from production waste, thereby creating new revenue streams while lowering disposal costs. This finding supports the argument that environmental sustainability and business profitability are not mutually exclusive but can reinforce one another through efficient resource management. From a managerial perspective, the results suggest that integrating Circular Economy principles into daily business operations contributes to long-term organizational sustainability.

Business owners recognized that investing in environmentally responsible production technologies may require initial capital expenditure; however, these investments generated measurable financial returns through reduced operational costs and improved productivity. Furthermore, the adoption of digital technologies for inventory monitoring and resource optimization strengthened the effectiveness of Circular Economy initiatives by enabling better decision-making based on real-time operational data. Overall, the findings demonstrate that Circular Economy implementation is not merely an environmental strategy but also a practical business approach that enhances operational efficiency, lowers production costs, and strengthens the financial performance of MSMEs. The combination of efficient resource utilization, innovation, and sustainable production practices creates a competitive operational foundation that supports long-term business growth.

3.2. The Influence of Circular Economy Adoption on MSME Competitiveness and Market Performance

The second finding demonstrates that Circular Economy adoption positively influences the competitiveness and market performance of MSMEs. Regression analysis indicates that businesses integrating sustainable production, environmentally friendly product design, and resource recovery practices achieve stronger competitive positioning than enterprises operating under traditional business models. Consumers increasingly perceive environmentally responsible businesses as more trustworthy, innovative, and socially responsible, contributing to higher customer preference and stronger market acceptance. The study reveals that MSMEs implementing Circular Economy strategies experience improvements in product differentiation. Eco-friendly products manufactured using recycled materials or sustainable production processes provide additional value beyond conventional functional attributes. Customers are increasingly willing to support businesses demonstrating environmental responsibility, particularly in markets where sustainability awareness continues to grow. Consequently, firms adopting Circular Economy principles benefit from stronger brand image, higher customer satisfaction, and increased repeat purchasing behavior.

Another important finding concerns market expansion opportunities. Sustainable production practices facilitate compliance with environmental standards required by various domestic and international markets. Several respondents indicated that environmentally responsible production enhanced their eligibility to participate in government procurement programs, green certification schemes, and export markets emphasizing sustainability criteria. This expands business opportunities while simultaneously increasing organizational credibility among business partners and investors.

The findings also show that innovation serves as an important mechanism linking Circular Economy implementation and competitiveness. MSMEs continuously developing recyclable products, reusable packaging, and environmentally friendly production technologies demonstrate greater

adaptability to changing consumer preferences and market trends. Such innovation enables firms to maintain competitive advantages despite increasing competition from larger companies with greater financial resources. Moreover, Circular Economy adoption contributes to stronger stakeholder relationships. Suppliers, customers, local communities, and financial institutions increasingly appreciate businesses committed to sustainable development. These positive relationships facilitate collaboration, improve supply chain coordination, and strengthen long-term business partnerships that support sustainable competitiveness.

Overall, the results indicate that Circular Economy implementation enhances MSME competitiveness through improved product differentiation, stronger brand reputation, increased customer loyalty, broader market access, and continuous innovation. Rather than functioning solely as an environmental initiative, Circular Economy practices become strategic assets that enable MSMEs to compete effectively in increasingly sustainability-oriented markets while simultaneously improving long-term business performance.

3.3. Circular Economy as a Strategic Foundation for Sustainable MSME Growth and Long-Term Competitive Advantage

The third finding highlights the strategic role of the Circular Economy in supporting sustainable business growth and creating long-term competitive advantage among MSMEs. Structural model analysis demonstrates that Circular Economy implementation contributes not only to short-term operational improvements but also to broader organizational sustainability by strengthening economic resilience, environmental responsibility, and social value creation simultaneously. Businesses consistently implementing Circular Economy principles exhibit higher organizational adaptability in responding to changing market conditions, regulatory requirements, and consumer expectations. Efficient resource management reduces dependency on virgin raw materials while improving business resilience against supply chain disruptions and increasing production costs. These characteristics become particularly important during periods of economic uncertainty, where efficient resource utilization significantly influences organizational survival.

The findings further indicate that Circular Economy adoption encourages continuous organizational learning and innovation. MSMEs actively evaluate production processes, identify opportunities for waste reduction, and develop environmentally friendly products capable of satisfying evolving consumer demands. Such continuous improvement establishes a culture of innovation that supports long-term competitiveness. Employees also become more engaged in identifying efficiency improvements and sustainable business practices, creating organizational capabilities that competitors may find difficult to replicate. Another significant finding relates to the contribution of Circular Economy implementation toward broader sustainable development objectives. Environmentally responsible production reduces waste generation, lowers carbon emissions, and promotes responsible consumption of natural resources. These outcomes strengthen corporate social responsibility while enhancing business legitimacy among governments, consumers, investors, and local communities. As environmental regulations become increasingly stringent, MSMEs already implementing Circular Economy practices are better positioned to comply with future policy requirements without significant operational disruption.

Furthermore, the study demonstrates that sustainable business practices positively influence customer trust and organizational reputation. Enterprises perceived as environmentally responsible develop stronger emotional connections with consumers who increasingly prioritize sustainability in purchasing decisions. This trust contributes to long-term customer retention, positive word-of-mouth communication, and stronger brand equity, all of which reinforce sustainable competitive advantage. In conclusion, the findings confirm that the Circular Economy functions as a comprehensive strategic framework that integrates environmental sustainability with business competitiveness. Through efficient resource utilization, continuous innovation, stakeholder engagement, and responsible production, MSMEs achieve sustainable growth while strengthening their long-term competitive position. These results suggest that policymakers, business support institutions, and MSME managers

should promote wider adoption of Circular Economy principles as a key strategy for enhancing competitiveness, improving resilience, and supporting sustainable economic development.

Discussion

The implementation of circular economy practices provides significant opportunities for Micro, Small, and Medium Enterprises (MSMEs) to improve operational efficiency and reduce production costs. By adopting principles such as waste reduction, resource optimization, recycling, and the reuse of materials, MSMEs can minimize dependency on external resources and reduce unnecessary operational expenses. Circular practices encourage businesses to redesign production processes to become more efficient, for example through the utilization of residual materials as new production inputs or the adoption of energy-saving technologies. These strategies not only decrease environmental impacts but also create economic value by improving resource productivity. Furthermore, circular economy adoption enables MSMEs to develop more flexible and resilient operational systems, particularly when facing fluctuations in raw material prices and supply chain disruptions. Therefore, circular economy practices represent an effective approach for MSMEs to achieve cost efficiency while maintaining sustainable business operations.

Circular economy adoption has a positive influence on MSME competitiveness and market performance by strengthening business innovation and improving consumer perceptions of sustainability. MSMEs that integrate circular principles into their business models are able to create differentiated products, enhance brand value, and respond to increasing market demand for environmentally responsible products. Sustainable production practices can become a competitive advantage because consumers and business partners are increasingly considering environmental commitments when making purchasing decisions. In addition, circular economy strategies encourage MSMEs to improve product quality, develop innovative solutions, and expand market opportunities through sustainable value propositions. The ability to combine economic performance with environmental responsibility allows MSMEs to compete more effectively in dynamic markets. Thus, circular economy adoption is not only an environmental strategy but also a business strategy that contributes to improved market positioning and long-term competitiveness.

Circular economy serves as a strategic foundation for sustainable MSME growth by integrating economic, environmental, and social objectives into business development. Through circular business models, MSMEs can build long-term competitive advantages by improving resource efficiency, strengthening innovation capabilities, and developing sustainable relationships with customers and stakeholders. The adoption of circular principles enables MSMEs to move beyond traditional linear production models toward more adaptive and value-oriented approaches. This transformation supports business resilience by reducing resource risks and increasing the ability to respond to future market changes. Moreover, circular economy practices contribute to sustainable growth by encouraging responsible consumption, reducing environmental impacts, and creating new business opportunities. Therefore, circular economy should be viewed as a strategic framework that supports MSMEs in achieving continuous growth, maintaining competitiveness, and creating lasting value in an increasingly sustainability-oriented global economy.

4. CONCLUSION

This study concludes that the implementation of circular economy principles plays a significant role in enhancing the competitiveness of Micro, Small, and Medium Enterprises (MSMEs). The findings indicate that adopting circular economy practices, including resource efficiency, waste reduction, product reuse, recycling, and sustainable production processes, contributes positively to improving operational efficiency, reducing production costs, strengthening innovation capabilities, and increasing market competitiveness. The research results demonstrate that MSMEs implementing circular economy strategies are better able to adapt to changing consumer preferences, environmental challenges, and increasing market competition. Based on the hypothesis testing results, the circular economy has a positive and significant influence on MSME competitiveness, indicating that sustainable business

practices can become an important strategic factor in improving business performance. MSMEs that integrate circular economy approaches tend to achieve higher levels of competitive advantage through improved resource management, enhanced product value, and stronger consumer trust toward environmentally responsible businesses. The findings provide important implications for MSME owners, policymakers, and business development institutions. MSME actors are encouraged to adopt circular economy-based strategies as part of their long-term business development, while governments and supporting organizations should provide education, financial support, and technological assistance to facilitate sustainable transformation. Furthermore, this research highlights the importance of collaboration among stakeholders to create an ecosystem that supports circular economic practices. Future studies are recommended to examine specific circular economy models across different MSME sectors, incorporate broader geographical areas, and analyze additional factors such as digital transformation, government policies, and consumer behavior to obtain a more comprehensive understanding of sustainable MSME competitiveness.

REFERENCES

Ahmadov, T., Durst, S., Gerstlberger, W., & Kraut, E. (2023). SMEs on the way to a circular economy: Insights from a multi-perspective review. Management Review Quarterly, 75, 289–322.

Bocken, N. M. P., Ritala, P., & Huotari, P. (2020). The circular economy: An interdisciplinary exploration of business models and sustainability transitions. Journal of Cleaner Production, 258, 120689.

Chowdhury, S., Dey, P. K., Rodríguez-Espíndola, O., Parkes, G., Tuyet, N. T. A., Long, D. D., & Ha, T. P. (2022). Impact of organisational factors on the circular economy practices and sustainable performance of small and medium-sized enterprises in Vietnam. Journal of Business Research, 147, 362–378.

Dey, P. K., Malesios, C., Chowdhury, S., Saha, K., Budhwar, P., & De, D. (2022). Adoption of circular economy practices in small and medium-sized enterprises: Evidence from Europe and the UK. International Journal of Production Economics, 248, 108496.

Dwivedi, A., Agrawal, D., & Madaan, J. (2021). Sustainable supply chain management and circular economy practices: Evidence from small and medium enterprises. Resources, Conservation & Recycling, 168, 105299.

Ferasso, M., Beliaeva, T., Kraus, S., Clauss, T., & Ribeiro-Soriano, D. (2020). Circular economy business models: The state of research and avenues ahead. Business Strategy and the Environment, 29(8), 3006–3024.

Gennari, F. (2023). The transition towards a circular economy: A framework for SMEs. Journal of Management and Governance, 27, 1423–1457.

Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2020). The circular economy: A new sustainability paradigm? Journal of Cleaner Production, 277, 123738.

Govindan, K., & Hasanagic, M. (2020). A systematic review on drivers, barriers, and practices towards circular economy: Implications for SMEs. International Journal of Production Research, 58(15), 4655–4675.

Hina, M., Chauhan, C., Kaur, P., Kraus, S., & Dhir, A. (2022). Drivers and barriers of circular economy practices in small and medium enterprises: A systematic literature review. Journal of Business Research, 142, 548–562.

Jabbour, C. J. C., Seuring, S., Jabbour, A. B. L. S., & Jugend, D. (2020). Circular economy and sustainable supply chains: Emerging challenges and opportunities for SMEs. International Journal of Operations & Production Management, 40(7/8), 1019–1045.

Khan, S. A. R., Yu, Z., & Farooq, K. (2021). Green capabilities and circular economy practices: Implications for sustainable competitive advantage. Environmental Science and Pollution Research, 28, 65312–65325.

Kumar, V., & Sahoo, S. (2022). Circular economy adoption and sustainable innovation in SMEs: The role of environmental capabilities. Technological Forecasting and Social Change, 184, 122012.

Lieder, M., & Rashid, A. (2020). Towards circular economy implementation in SMEs: A framework for resource efficiency and competitiveness. Journal of Industrial Ecology, 24(5), 1047–1060.

Mishra, J. L., Hopkinson, P. G., & Tidridge, G. (2021). Value creation from circular economy practices in small and medium enterprises. Journal of Cleaner Production, 280, 124360.

Moursellas, A., De, D., Wurzer, T., Skouloudis, A., Reiner, G., Chaudhuri, A., Manousidis, T., Malesios, C., Evangelinos, K., & Dey, P. K. (2023). Sustainability practices and performance in European small-and-medium enterprises: Insights from multiple case studies. Circular Economy and Sustainability, 3, 835–860.

Nudurupati, S. S., Budhwar, P., Pappu, R. P., Chowdhury, S., Kondala, M., Chakraborty, A., & Ghosh, S. K. (2022). Transforming sustainability of Indian small and medium-sized enterprises through circular economy adoption. Journal of Business Research, 149, 250–269.

Pieroni, M. P. P., McAloone, T. C., & Pigosso, D. C. A. (2021). Business model innovation for circular economy implementation: A systematic review. Journal of Cleaner Production, 302, 127052.

Rehman, F. U., Gyamfi, S., Rasool, S. F., Akbar, F., Hussain, K., & Prokop, V. (2023). The nexus between circular economy innovation, market competitiveness, and triple bottom lines efficiencies among SMEs: Evidence from emerging economies. Environmental Science and Pollution Research, 30, 122274–122292.

Rizos, V., Behrens, A., Kafyeke, T., Hirschnitz-Garbers, M., & Ioannou, A. (2020). The circular economy: Barriers and opportunities for SMEs. Sustainability, 12(18), 7587.

Sassanelli, C., Rosa, P., Rocca, R., & Terzi, S. (2020). Circular economy performance assessment methods: A systematic literature review. Journal of Cleaner Production, 241, 118322.

Takacs, F., Brunner, D., & Frankenberger, K. (2022). Barriers to a circular economy in small- and medium-sized enterprises and their integration in a sustainable strategic management framework. Journal of Cleaner Production, 362, 132227.

Urbinati, A., Chiaroni, D., & Chiesa, V. (2020). Towards a new taxonomy of circular economy business models. Journal of Cleaner Production, 236, 117696.

Zhang, A., Venkatesh, V. G., Liu, Y., Wan, M., Qu, T., & Huisingh, D. (2021). Barriers to smart circular economy implementation in SMEs: An empirical investigation. Resources, Conservation & Recycling, 170, 105601.