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Financial Literacy as a Catalyst for Circular Economy Adoption in Rural MSMEs in Indonesia and ASEAN

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Abstract

This study aims to explore financial literacy as a key catalyst for accelerating the adoption of the circular economy among Micro, Small, and Medium Enterprises (MSMEs) in rural areas of Indonesia and ASEAN countries. Employing a descriptive qualitative approach through a literature review, the research specifically identifies the relationship between the financial literacy levels of MSME owners and their readiness to implement circular economy innovations. Key aspects discussed include financial management understanding, capacity to access alternative funding sources, and challenges in integrating sustainability principles into everyday business practices. The literature review indicates that low financial literacy significantly hinders rural MSMEs' green investment decisions, while enhancing financial literacy is shown to strengthen MSMEs' capacity to effectively and sustainably adopt circular economy practices. The study underscores the importance of financial education strategies and community-based support programs as strategic initiatives that should be reinforced by government policies and multisectoral collaboration to ensure sustainable rural economic development in Indonesia and the ASEAN region.

Keywords

Financial literacy, Circular Economy, MSMEs, Sustainability, Rural Development, Indonesia, ASEAN

INTRODUCTION

The global environment is currently under severe pressure due to the "take-use-throw" linear economic model that leads to excess waste and ecosystem damage. The concept of circular economy emerged as a solution by emphasizing the 3R (reduce, reuse, recycle) principle to minimize waste and maximize resource efficiency (Kirchherr et al., 2017). ASEAN countries, including Indonesia, are beginning to adopt the circular economy as a sustainable development strategy. These regional commitments are reflected in the ASEAN policy framework that encourages sustainable production and consumption, for example through the ASEAN Framework for Circular Economy in 2021. In Indonesia, the government targets a transition to a circular economy by 2030 which is projected to increase GDP by ~2.5%, create 4.4 million new jobs, and reduce production waste by 40% (Zuhri et al., 2024). This shows the urgency and potential of circular economy transformation to address the challenges of climate change and sustainability in the region.

As the backbone of the economy, Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in Indonesia and ASEAN countries. Indonesia has more than 62 million MSME units that absorb about 97% of the national workforce and account for about 60% of GDP (60 Decibels, 2025). Regionally, a similar proportion occurs in ASEAN where MSMEs account for >99% of total businesses, contribute between 16–70% to national GDP and absorb ~85% of the region's workforce (ASEAN Secretariat, 2025). MSMEs – including those operating in rural areas – play an important role in economic equity and poverty alleviation through the creation of local jobs. However, the characteristics of MSMEs that are small and scattered make them vulnerable to various resource limitations. Previous research noted that MSMEs often face constraints on limited capital, access to technology, and human resource capacity, so the adoption of sustainable business practices is still low (Zuhri et al., 2024; Teo et al., 2023). In particular, rural MSMEs generally have a more limited level of education and access to information, so they are less exposed to green

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innovations than business actors in urban areas. This condition makes the implementation of the circular economy by rural MSMEs a challenge in itself that requires strategic support.

The low adoption of the circular economy in the MSME sector is reflected in the lack of awareness and understanding of business actors towards this concept. A recent survey in Southeast Asia found that only about 57% of ASEAN MSMEs are familiar with the concept of the circular economy (ASEAN Secretariat, 2025). The gap in knowledge and technical capacity is the main obstacle to the implementation of circular practices in MSMEs (ASEAN Secretariat, 2025). Many MSME actors are not yet aware of the long-term benefits of the circular business model, while others are hesitant to change the production process because consumer preferences are still inclined towards single-use products and low prices (ASEAN Secretariat, 2025). Research in rural areas also shows that there are cultural and habit constraints: rural MSMEs tend to maintain conventional business patterns due to a lack of "Green Culture" and an understanding of environmentally friendly business models (Teo et al., 2023). In addition to the knowledge factor, financial barriers are often reported as significant obstacles. Many MSMEs do not have enough funds and investments to change the production process or buy environmentally friendly technology. The initial cost of implementing the 3R principle (e.g., recycling technology or waste treatment system) is considered high, so MSME actors are reluctant to invest without a guarantee of short-term profits (60 Decibels, 2025). Thus, the combination of limited capital, lack of literacy, and market preferences that do not fully support sustainable products causes the adoption of the circular economy by MSMEs to be slow.

In the context of these financial constraints, financial literacy is suspected to play a role as a catalyst that encourages the adoption of the circular economy among MSMEs, especially in rural areas. Financial literacy refers to the knowledge and skills of business actors in managing business finances, including understanding budget planning, debt management, the use of banking services, and good accounting records. The level of financial literacy of MSME owners in Indonesia is still generally low, and this contributes to weak financial management and the sustainability of their businesses (Puspita et al., 2022). Low financial literacy makes it difficult for MSMEs to access formal credit and make strategic investment decisions (Suidarma et al., 2024). Many rural MSME actors rely on their own capital or informal loans due to limited understanding of financial products and low trust of financial institutions in MSMEs whose books are not organized (Suidarma et al., 2024). In fact, various studies show that increasing financial literacy is positively correlated with the performance and sustainability of MSMEs. For example, Puspita et al. (2022) found that a higher level of financial literacy significantly increases the sustainability of MSME businesses in Indonesia. Similarly, Sumastuti et al. (2024) reported that MSMEs with good financial literacy tend to be better able to integrate sustainable business practices so that their long-term financial performance is stronger. Adequate financial literacy helps MSME actors develop financial plans that support innovation, manage cash flow for green technology investments, and increase opportunities to obtain funding (green finance) or government incentives related to circular economy programs (Sumastuti et al., 2024). In other words, financial literacy can empower MSME actors to understand the economic benefits of the circular economy, such as the cost efficiency of raw materials through recycling, so that they are more motivated to adopt these practices. Through good financial management skills, MSMEs can overcome financing obstacles that have been hindering sustainable innovation. High financial literacy also increases the credibility of MSMEs in the eyes of financial institutions, opening access to low-interest loans or green funding schemes that can be used for circular economy implementation capital (Suidarma et al., 2024). Therefore, financial literacy is seen as a key factor that accelerates the diffusion of circular economy innovation in the MSME sector.

Based on the above background, this study aims to explore the role of financial literacy as a catalyst for circular economy adoption in rural MSMEs in Indonesia and the ASEAN region. The approach used is a descriptive literature review, by examining the findings of recent studies (over the last 10 years) from reputable international journals and relevant accredited national journals. The geographical focus on Indonesia and ASEAN countries was chosen given the similarity of characteristics of MSMEs in the region and the importance of the circular economy in the regional

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sustainable development agenda. Theoretically, this research is expected to contribute to enriching the treasure of literature on the factors driving the circular economy in MSMEs. In particular, this study bridges two study domains that have been separated (MSME financial literacy and circular economy adoption) so that it can provide a new perspective on the relationship between financial capabilities and sustainability innovation in small businesses. Many previous studies have discussed the adoption of the MSME circular economy in terms of technical or policy barriers in developed countries, while the perspective of financial literacy in the context of developing countries is still rarely raised (Zuhri et al., 2024). Therefore, the results of this review offer novelty by highlighting financial literacy as a potential element to accelerate the transition of MSME businesses to a circular economy in rural areas. Practically, the findings of this study can be an input for policymakers and stakeholders related to MSME empowerment. The recommendations of this study include encouraging the integration of financial literacy education programs in sustainability-based MSME management training, providing access to appropriate green financing for rural MSMEs, and developing incentive policies that link sustainability performance with credit facilities. By increasing financial literacy and business capacity, rural MSMEs are expected to be more prepared and willing to adopt circular economy principles, so that in turn they can improve local economic performance while supporting the achievement of sustainable development targets in Indonesia and ASEAN.

RESEARCH METHODS

This study uses a descriptive literature review approach to synthesize various empirical and conceptual findings regarding the relationship between financial literacy and circular economy adoption by rural MSMEs in Indonesia and ASEAN countries. The aim of this approach is to identify thematic patterns, research gaps, and the potential role of financial literacy in driving transformation towards a circular economy model.

Research Design

The literature selection criteria are carried out by considering: (1) the year of publication in the last ten years (2015–2024); (2) regional focus on Indonesia and ASEAN countries; and (3) relevant types of sources in the form of academic journal articles, government policy reports, and official publications of regional organizations such as ASEAN and OJK.

Data Collection and Sources

The selected literature was obtained through systematic searches in databases such as Google Scholar, Scopus, and the websites of official institutions. Keywords used in the search included "financial literacy", "MSMEs", "circular economy", "rural MSMEs", and "sustainability" in Indonesian and English

Data Analysis

The analysis procedure was carried out thematically, by grouping literature based on topics: (a) the level of financial literacy of MSMEs, (b) the challenges of circular economy adoption, and (c) the potential linkages between the two. The synthesis process is carried out descriptively without a statistical approach, with an emphasis on narrative integration between repeated and complementary findings.

The selection of this approach is appropriate for obtaining a thorough understanding of the phenomena and practices in the field that have been researched previously. This study did not involve direct interaction with field subjects, and all data were obtained from secondary sources that have been published publicly.

ANALYTICAL FRAMEWORK

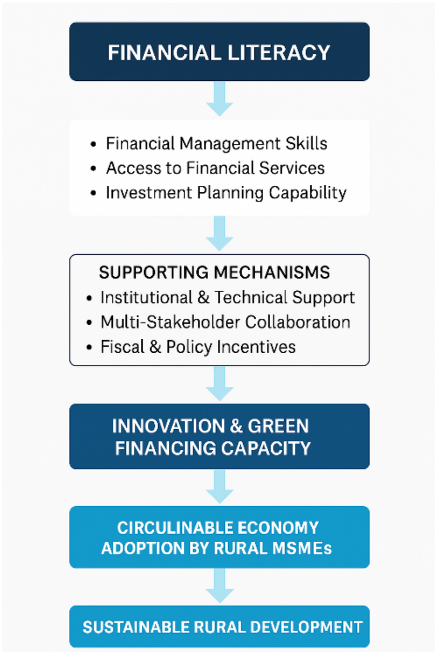

Figure 1. Financial Literacy-Circular Economy Framework

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Figure Description

Figure 1 illustrates the theoretical framework explaining how financial literacy acts as a catalyst for the adoption of circular economy practices among rural MSMEs, ultimately leading to sustainable rural development. At the top of the framework, financial literacy represents the foundational element that strengthens MSMEs' abilities in financial management, accessing financial services, and investment planning. These competencies enable business owners to make informed financial decisions and strategically allocate resources for sustainable initiatives.

The next component, supporting mechanisms, comprises institutional and technical support systems, multi-stakeholder collaboration, and fiscal and policy incentives. These mechanisms serve as enablers that translate financial literacy into tangible business innovations and improve MSMEs' access to green financing opportunities. As a result, MSMEs with strong financial literacy and institutional backing develop greater innovation and green financing capacity, allowing them to invest in environmentally friendly technologies and circular business models.

The progression of these elements leads to circular economy adoption by rural MSMEs, characterized by efficient resource utilization, waste reduction, and environmentally responsible production processes. Ultimately, this transformation contributes to sustainable rural development, fostering inclusive economic growth, resilience, and environmental sustainability within local communities.

Table 1. Descriptive Statistics on Financial Literacy and Circular Economy Adoption among Rural MSMEs

Indicator	Recent Findings (2023–2025)	Source
Total MSMEs in Indonesia	±62 million units; contribute around 60% of GDP and absorb 97% of the labor force	60 Decibels, 2025
Share of Rural MSMEs	±70–75% of total MSMEs	ASEAN Secretariat, 2025
MSMEs familiar with the circular economy concept	57%	ASEAN Secretariat, 2025
MSMEs actively applying circular practices (3R)	15–18%	ASEAN Secretariat, 2025
MSMEs with good or high financial literacy	<30% (majority at "moderate literacy" level)	OJK, 2019; Muna et al., 2023
MSMEs reporting financial constraints as key obstacle	±68%	Mishra et al., 2024
Access of rural MSMEs to formal credit	19–22%	BPS, 2024
MSMEs accessing green or sustainability finance	<10%	Ministry of Finance, 2024
MSMEs improving innovation capacity after financial literacy training	+35%	Sumastuti et al., 2024
Expected impact of circular economy transition by 2030 (Indonesia)	+2.5% GDP growth, 4.4 million new jobs, 40% waste reduction	Zuhri et al., 2024

Interpretation of Descriptive Statistics

The data demonstrate that although awareness of the circular economy concept is relatively moderate (57%), actual implementation remains limited, only around 15–18% of rural MSMEs apply circular or green practices. This gap reveals a significant opportunity to strengthen literacy, capacity, and access to green financing. The majority of MSMEs exhibit low to moderate levels of financial literacy, with fewer than one-third categorized as highly literate. This condition leads to poor financial planning, limited

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bookkeeping, and difficulty accessing formal or green credit facilities. Approximately 68% of MSMEs identify financial barriers as the most significant constraint to adopting sustainable business practices.

Access to formal financing remains low, only about one-fifth of rural MSMEs obtain bank loans or structured credit. Moreover, less than 10% of MSMEs benefit from green financing programs such as KUR Hijau, CSR schemes, or micro green loans, indicating the need for improved outreach and literacy-driven eligibility support. The data also highlight a positive correlation between financial literacy and innovation readiness: MSMEs participating in financial literacy programs reported a 35% increase in innovation and investment capability. This finding supports the argument that financial literacy serves as a key enabler for MSME transformation toward circular business models.

RESULTS AND DISCUSSION

The results of the literature synthesis show that financial literacy contributes significantly to strengthening the innovation capacity and green investment ability of rural MSMEs. Business actors who have a good financial understanding tend to be more innovative and proactive in implementing sustainable business practices (Molina-García et al., 2025). Financial literacy strengthens the company's internal capacity to manage resources efficiently and creatively, thereby encouraging the birth of environmentally friendly process innovation. This is consistent with the findings of Mishra et al. (2024) that financial constraints are the main obstacle in the implementation of circular economy principles by MSMEs

Financial Literacy in the Context of Rural MSMEs

Financial literacy refers to the ability of individuals to understand financial concepts and risks and make effective decisions in managing personal or business finances. In the context of rural MSMEs, financial literacy includes basic knowledge such as cash flow recording, budget planning, credit management, and understanding of formal financial products (OJK, 2019). The low level of financial literacy among MSME actors in rural areas leads to limitations in strategic decision-making, especially related to investment and business development (Puspita et al., 2022). National surveys show that only a small percentage of MSMEs have a good understanding of finance, and the majority are at the level of "quite literate", meaning they know financial services but do not understand their functions in depth (Muna et al., 2023).

The literature also highlights that low financial literacy is one of the main causes of errors in financial management, difficulty in accessing formal credit, and weak ability to develop sustainable business planning (Aribawa, 2016; Suidarma et al., 2024). On the other hand, adequate financial literacy has been proven to contribute to improving business performance, business sustainability, and adaptability to external changes (Sumastuti et al., 2024). This condition emphasizes the importance of financial literacy as a foundation for strengthening business capacity in the MSME sector, especially in rural areas that have limited access to financial information and services.

Challenges of Circular Economy Adoption by MSMEs

The circular economy is a sustainable development approach that emphasizes waste reduction and optimization of resource use through the 3R (reduce, reuse, recycle) principle. In Indonesia and ASEAN, the transition to a circular economy has begun to be adopted as part of national and regional development strategies (ASEAN Secretariat, 2025). MSMEs, especially those operating in rural areas, face various obstacles in adopting a circular business model.

Some of the main challenges identified in the literature include: low awareness and understanding of business actors on the concept of circular economy; limited access to technology and technical skills; consumer preference for cheaper conventional products; as well as regulatory barriers and lack of incentive support from the government (Mishra et al., 2024; Zuhri et al., 2024). The ASEAN Survey (2025) notes that most MSMEs in the region still consider the circular model to be complicated and expensive, as it requires significant changes in production processes, logistics, and supply chains.

Financial factors are also the main obstacle. The implementation of circular practices often requires initial investment in new technologies or recycling systems, which are difficult for MSMEs with limited capital to reach (Teo et al., 2023). The lack of access to financing support, limited fiscal incentives, and

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lack of managerial skills make many MSMEs reluctant or unable to transform towards a circular economy. An empowerment approach that not only focuses on technical aspects, but also on strengthening basic capacity, including financial literacy aspects, needs to be considered.

The Potential Linkage of Financial Literacy and the Circular Economy

Literature studies that directly link financial literacy and circular economy adoption in MSMEs are still limited. Some of the latest findings suggest a potential link. Financial literacy can help MSME actors understand the economic benefits of circular practices such as cost efficiency, waste reduction, and access to green markets (Molina-García et al., 2025). With the ability to plan finances and evaluate investment risks, financially literate MSME actors are better prepared to transform their business models from linear to circular.

The literature also shows that financial literacy plays a role in increasing innovation readiness and green investment capacity. Business owners who understand the concept of financing and fund management are more likely to take advantage of funding opportunities for sustainable initiatives, such as green credit or support for CSR programs from the private sector/government (Sumastuti et al., 2024). This ability plays an important role in overcoming the classic barriers of MSMEs to circular economy practices, especially related to start-up capital and market uncertainty.

These findings show that financial literacy can be seen as one of the key elements in preparing rural MSMEs to transform towards a circular economy. Building financial capacity not only strengthens the foundation of sound business management, but also paves the way for innovation and long-term business sustainability. The importance of integrating financial literacy programs in the green transition-oriented MSME empowerment agenda in Indonesia and the ASEAN region is becoming increasingly relevant.

CONCLUSION

This study confirms that financial literacy is an important element in supporting the transformation of rural MSMEs towards a circular economy. Based on a review of various academic literature and official publications in the last decade, it was found that MSME actors who have a good financial understanding tend to be more innovatively and financially prepared to adopt sustainable business practices. Financial literacy strengthens the ability to manage risk, plan green investments, and assess the feasibility of initiatives based on the principles of reduce, reuse, and recycle.

These findings have strong practical implications for the empowerment of MSMEs in Indonesia and the ASEAN region. The integration of financial literacy programs in business management training and circular business mentoring is very necessary. This training not only equips MSME actors with technical skills, but also fosters strategic thinking capacity in financial management for sustainability. In addition, supporting policies such as fiscal incentives and access to environmentally friendly financing need to be designed in line with the improvement of the financial capabilities of business actors.

This study is limited to a synthesis of secondary literature, so it does not include empirical verification of the relationship between financial literacy and direct circular economy adoption. For further research, it is recommended to conduct a primary data-based field study to evaluate the actual impact of financial literacy on circular business transformation in the rural MSME sector. Future research can also expand the scope to specific industrial sectors, as well as develop financial literacy program evaluation instruments specific to environmentally-oriented MSMEs.

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