
Digitalization and Financial Reporting of MSMEs in the Green Economy Era: A Review

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Keywords

Digitalization, MSMEs, Financial Reporting, Green Economy, ESG, Article Review

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Abstract

This study reviews the literature to examine the influence of digitalization on financial reporting practices among Micro, Small, and Medium Enterprises (MSMEs) in the context of the green economy. The rapid development of digital technologies, including cloud accounting, blockchain-based systems, and electronic reporting tools, has transformed MSME financial management by improving efficiency, accuracy, and transparency. Despite these advances, empirical evidence connecting digital financial systems with sustainability-oriented reporting remains limited, particularly in developing economies. Using an article review method, this study synthesizes relevant literature published between 2013 and 2025 obtained from major academic databases. The analysis identifies three main themes: (1) digital adoption and improvements in financial efficiency, (2) enhanced transparency and reliability of financial information, and (3) the integration of sustainability aspects through green accounting and Environmental, Social, and Governance (ESG)-oriented disclosures. The findings indicate that digitalization can strengthen MSME financial accountability, facilitate access to green financing, and encourage alignment with ESG principles. However, several challenges persist, including low levels of digital literacy, limited technological infrastructure, and the absence of standardized sustainability reporting frameworks tailored for MSMEs. Overall, this study highlights the importance of developing an integrated digital financial reporting framework that incorporates ESG indicators to support green digital accounting and promote sustainable MSME development.

1. Introduction

The development of digital technology has brought significant changes to the global economic system, including in the management and reporting of financial data within Micro, Small, and Medium Enterprises (MSMEs) (Fauzi & Sheng, 2022). Digitalization enables financial reporting processes to be conducted more efficiently, accurately, and transparently through various platforms such as cloud accounting, e-reporting, and blockchain

systems (Pratama, 2025). This transformation is not merely about improving business efficiency but also represents a crucial strategy to strengthen financial governance and the competitiveness of MSMEs in the modern economy (Pangarso et al., 2022). In the context of sustainable development, digitalization plays a dual role enhancing economic productivity while simultaneously supporting the reduction of environmental impacts through paperless accounting practices and resource efficiency (Teng et al., 2023).

MSMEs make a significant contribution to the national economy, particularly in creating employment opportunities and improving community welfare (Nursini, 2020). However, despite their contributions, many MSMEs still face serious challenges such as limited financial literacy, inadequate digital infrastructure, and high technology adoption costs (Cueto et al., 2022). These conditions often result in poor-quality financial reports and limited access to formal financing. In fact, sound financial reporting supported by digital technology is crucial for enhancing business credibility and promoting higher levels of transparency. Therefore, financial reporting digitalization has become a strategic step for MSMEs to achieve business sustainability and readiness to transition toward a green economy.

In recent years, numerous studies have examined the relationship between digitalization and financial reporting, but most have focused primarily on aspects of efficiency and technology adoption (Rabbani, 2024). Research that explicitly links digitalization with sustainable business practices and the green economy remains limited, especially in the context of developing countries (Luo et al., 2023). Existing studies also tend to focus on large corporations, while MSMEs have unique characteristics and challenges that differ significantly (Gherhes et al., 2016; Krishnan et al., 2020). The literature gap regarding the role of digitalization in promoting green reporting (green financial reporting) indicates an important research gap that needs to be addressed systematically.

This study employs a Systematic Literature Review (SLR) to examine trends, key themes, and future research directions related to the digitalization of financial reporting among Micro, Small, and Medium Enterprises (MSMEs) in the green economy context. The SLR approach enables a structured and evidence-based analysis of existing literature while identifying research gaps and underexplored areas. This study contributes conceptually by enhancing understanding of the relationship between digitalization and sustainability reporting in MSMEs, methodologically by mapping research trends and gaps, and practically by providing insights for policymakers and practitioners in developing digital financial reporting strategies aligned with green economy principles. Overall, the study supports the development of green digital accounting as an integrated framework connecting technological innovation and sustainable accounting practices.

2. Research Methods

This study employs a descriptive qualitative approach using an article review method to identify, evaluate, and synthesize relevant literature on the digitalization of financial reporting for Micro, Small, and Medium Enterprises (MSMEs) in the era of the green economy. This method was chosen because it enables an in-depth analysis of research trends, digital accounting practices, and public policies that support digital transformation and MSME sustainability across developing countries.

The research process was carried out through three main stages. First, the identification stage involved reviewing scientific publications, policy reports, and international documents sourced from reputable databases such as Scopus, ScienceDirect, and Google Scholar, as well as institutional reports from organizations such as the OECD (2021) and World Bank (2025). Second, the thematic classification stage was conducted by organizing the literature into several major themes related to MSME digitalization, namely: (a) adoption of digital technologies, (b) accuracy and transparency of financial reporting, (c) integration of sustainability reporting, and (d) challenges and readiness of MSMEs in digital transformation. Third, the analysis and synthesis stage was used to draw comprehensive conclusions from the various findings while identifying research gaps related to digitalization and sustainable financial reporting among MSMEs.

Data analysis was conducted using comparative thematic synthesis, which involves comparing prior research on digital accounting, e-reporting systems, blockchain-based reporting, and ESG integration within the MSME

context. Triangulation was applied by cross-checking findings from multiple sources to strengthen the validity and reliability of the study. To clarify the relevance of each reviewed literature to the development of this study, a table was prepared summarizing the main sources and their contributions to the conceptual framework.

Table 1. Key References Relevant to MSME Digitalization and Green Economy

Source	Year	Contribution to the Study
OECD. SMEs Going Digital	2021	Provides an analytical framework for MSME digitalization policies and adoption challenges.
World Bank. SMEs in Emerging Economies and ESG Practices	2025	Serves as a primary reference for ESG reporting and sustainability integration in MSMEs.
Luo et al. Digitalization & Sustainable Development	2023	Provides theoretical foundations on the relationship between digitalization and green innovation.
Fauzi & Sheng. Digitalization of MSMEs	2022	Explains key factors influencing digital readiness among MSMEs.
Pratama. Digital Trust & Reporting	2025	Examines the implications of digitalization for reporting accountability and trust.
Diwan & Sreeraman. ESG Reporting Evolution	2024	Offers conceptual insights on integrating sustainability reporting within digital systems.
Farmanesh et al. AI & Green Innovation in SMEs	2025	Provides insights into the role of AI and digital tools in supporting MSME green innovation.
Neumeyer et al. Digital Literacy Challenges	2020	Explains digital literacy barriers as key obstacles to MSME digitalization.
Pangarso et al. Green Economy and MSME Sustainability	2022	Provides a conceptual framework linking MSME sustainability with the green economy.
Gherhes et al. MSME Characteristics	2016	Provides foundational references on MSME characteristics relevant to digital transformation.

3. Result and Discussion

3.1. Trends in Digitalization and MSME Financial Reporting

The findings indicate that most MSMEs across various countries have begun transitioning to digital accounting and financial reporting systems. This development is particularly evident in nations that emphasize the importance of sustainability and technological innovation. Digitalization has had a significant impact on enhancing reporting accuracy, improving decision-making efficiency, and strengthening stakeholder trust. Through the adoption of cloud accounting, mobile finance applications, and e-reporting systems, MSMEs are now able to record transactions in real time and produce financial reports that are more transparent and easily verifiable.

The implementation of digital-based financial reporting also contributes to sustainable business practices (Gao, 2023). By adopting paperless reporting systems, MSMEs can reduce the use of paper and other resources, aligning with the principles of the green economy (Pangarso et al., 2022). In addition, digital financial reporting facilitates MSMEs' access to financing from financial institutions that require credible digital reports as proof of business accountability.

However, significant challenges remain, particularly concerning technological literacy, limited financial resources, and uneven digital infrastructure in developing countries (Neumeyer et al., 2020). These issues continue to hinder the widespread and effective adoption of digital financial reporting among MSMEs, despite its proven benefits for transparency, efficiency, and sustainability.

To provide a clearer overview of the current developments in MSME digital transformation, Table 2 summarizes the key emerging trends in digitalization and financial reporting. The table highlights three main

aspects—digital adoption, reporting accuracy, and business sustainability each accompanied by the associated challenges faced by MSMEs in implementing digital reporting systems.

Table 2. Emerging Trends in Digitalization and MSME Financial Reporting

Trend Aspect	Key Developments	Challenges
Digital Adoption	Increasing use of cloud accounting and digital finance applications	Low digital literacy and high initial investment cost
Reporting Accuracy	Automation of data and real-time transaction recording	Data security and system integration issues
Business Sustainability	Paperless reporting and inclusion of green performance indicators	Lack of standardized green reporting frameworks

Source: (OECD, 2021; Pwcsmesurvey, 2020)

Table 2 presents the emerging trends that define the ongoing transformation of financial reporting among Micro, Small, and Medium Enterprises (MSMEs) in the digital era. The table identifies three major dimensions digital adoption, reporting accuracy, and business sustainability which together illustrate how technology reshapes MSME accounting practices and their alignment with green economy principles.

First, digital adoption reflects the widespread use of cloud accounting and mobile financial applications that simplify financial management, though it remains constrained by low digital literacy and high implementation costs, particularly among micro-enterprises. Second, reporting accuracy demonstrates how automation and real-time data entry improve transparency and reliability in financial information. However, issues of data security and system integration continue to pose operational risks. Finally, business sustainability shows that digitalization encourages paperless reporting and the inclusion of environmental performance metrics, although the lack of standardized green reporting frameworks limits consistency across firms.

Overall, the table underscores that digitalization not only enhances financial efficiency but also supports environmental accountability. These interrelated trends suggest that the integration of digital systems into MSME financial reporting can serve as a foundation for developing green digital accounting frameworks that promote transparency, resilience, and sustainability in the MSME sector.

3.2. Green Economy Integration

The integration of the green economy concept into MSME financial reporting represents a paradigm shift from traditional accounting toward sustainable business accountability (Purnomo & Purwandari, 2025). A growing body of research emphasizes that financial reporting is not merely a financial disclosure tool but also a mechanism for demonstrating environmental and social responsibility (Siew, 2015). Digital reporting systems enable MSMEs to incorporate sustainability indicators, such as carbon footprint measurement, waste management, and energy efficiency tracking, into their accounting processes (Diwan & Sreeraman, 2024).

By adopting digital systems, MSMEs can automate the collection and disclosure of *green performance metrics* that align with the Sustainable Development Goals (SDGs) (Farmanesh et al., 2025). This digital transformation facilitates the preparation of *Environmental, Social, and Governance (ESG)* reports, improves transparency for stakeholders, and enhances corporate reputation (Alkaraan et al., 2022). Moreover, digital integration supports access to *green financing* programs by providing verifiable data on environmental performance a key criterion for sustainability-oriented investors and financial institutions (Distefano et al., 2025).

However, implementation challenges persist, including the lack of standardized environmental reporting frameworks and insufficient awareness of green accounting practices among MSME owners. Governments and financial authorities therefore play a crucial role in formulating policies, incentives, and capacity-building programs to strengthen MSMEs' participation in the green economy. The summary of key integration dimensions is presented in Table 3, which highlights the environmental, social, and financial aspects linked to digital financial reporting.

Table 3 presents the main dimensions of green economy integration within MSME financial reporting, focusing on the role of digital systems in improving environmental efficiency, social accountability, and access to sustainable finance.

Table 3. Key Dimensions of Green Economy Integration in MSME Financial Reporting

Dimension	Digital Integration Focus	Expected Impact
Environmental	Energy efficiency, waste management, paperless operations	Reduced resource consumption and lower carbon emissions
Social	Employee welfare, community impact reporting	Strengthened corporate reputation and stakeholder trust
Financial	Access to green financing, sustainability-linked loans	Improved financial resilience and investor confidence

Source: (Khatib et al., 2025; Lee & Kim, 2024; WorldBank, 2025)

Table 3 illustrates the main dimensions through which digitalization facilitates the integration of green economy principles into MSME financial reporting. These dimensions—environmental, social, and financial—represent the key areas where digital tools and sustainable practices intersect to promote responsible business performance.

The environmental dimension focuses on improving energy efficiency, minimizing waste, and promoting paperless operations. By leveraging digital accounting and reporting platforms, MSMEs can reduce resource consumption and lower carbon emissions, contributing directly to environmental preservation. The social dimension emphasizes transparency in reporting social impacts, such as employee welfare, workplace safety, and community engagement. Integrating social indicators into digital reports helps strengthen organizational reputation and build long-term stakeholder trust.

Meanwhile, the financial dimension highlights how digitalization enhances MSMEs' access to green financing and sustainability-linked loans. Through verifiable digital financial statements, MSMEs can demonstrate their environmental and social performance to investors and banks that prioritize sustainable portfolios. Collectively, these three dimensions underline the strategic importance of digital transformation not only for improving efficiency but also for advancing the sustainability agenda in the MSME sector. Thus, digital financial reporting becomes an enabling mechanism that aligns business performance with the broader goals of the green economy and sustainable development.

3.3. Gaps and Future Research Directions

While digitalization facilitates greater transparency and efficiency in MSME financial reporting, the review identifies several critical research gaps that remain underexplored. First, there is a lack of empirical studies that directly link green finance indicators—such as energy efficiency, carbon footprint, or environmental investment—with MSME financial reporting systems. Most existing studies focus primarily on digital adoption or automation without integrating environmental and sustainability dimensions into the financial reporting process. Second, there is a pressing need for cross-country comparative analyses to understand how national policies, infrastructure readiness, and regulatory environments shape the adoption of green digital reporting among MSMEs. Research from developing economies, in particular, remains limited, leading to an incomplete understanding of contextual challenges such as digital literacy, financial capacity, and policy support. Third, emerging technologies such as Artificial Intelligence (AI) and blockchain offer new possibilities for improving data integrity, sustainability auditing, and compliance monitoring in financial reporting. However, their potential role in ensuring sustainable reporting compliance is still at an early stage of academic inquiry.

Future research should therefore focus on developing hybrid digital-financial frameworks that integrate Environmental, Social, and Governance (ESG) indicators tailored to MSMEs. Such frameworks would enable more holistic assessments of MSME performance, bridging the gap between financial transparency and sustainability accountability—thus contributing to the broader agenda of the global green economy.

To provide a clearer overview of the main limitations identified in the reviewed literature, Table 4 summarizes the key research gaps and corresponding directions for future studies. The table highlights critical areas that require further investigation, including the integration of green finance indicators, comparative cross-country analyses, the potential application of AI and blockchain, and the development of ESG-based digital financial frameworks for MSMEs.

Table 4. Key Research Gaps and Future Research Directions

Research Gap	Description	Future Research Direction
Limited empirical linkage between green finance and digital reporting	Few studies connect sustainability metrics (e.g., energy use, waste reduction) with MSME financial systems.	Conduct empirical studies integrating green finance indicators into digital financial reporting frameworks.
Lack of cross-country comparative research	Most studies focus on developed countries; limited evidence from developing economies with different contexts.	Perform comparative analyses on policy, infrastructure, and digital literacy affecting MSME digital reporting.
Underexplored role of AI and blockchain	AI and blockchain are recognized as transformative tools but lack empirical validation in sustainability auditing.	Investigate how AI and blockchain can ensure transparency and compliance in MSME sustainable reporting.

Source: (OECD, 2021; WorldBank, 2025)

Table 4 provides a structured summary of the major research gaps identified in the existing literature and proposes potential directions for future studies. The analysis indicates that while digitalization and sustainability reporting in MSMEs have gained considerable scholarly attention, several dimensions remain underexplored and fragmented.

The first major gap lies in the limited empirical linkage between green finance indicators and digital financial reporting. Few studies have examined how sustainability metrics—such as energy consumption, waste reduction, or carbon disclosure—can be systematically integrated into MSME accounting systems. Future research should therefore focus on developing empirical models that connect financial transparency with environmental performance. The second gap relates to the lack of cross-country comparative analyses. Most current research concentrates on developed economies, neglecting the contextual challenges of developing nations where MSMEs form the economic backbone. Comparative studies could reveal how differences in policy support, technological readiness, and institutional capacity influence digital sustainability adoption.

The last gap, involves the underexplored role of Artificial Intelligence (AI) and blockchain technologies in ensuring sustainability auditing and compliance. Finally, there is an absence of integrated ESG-based frameworks that holistically connect digitalization with environmental and social accountability. Addressing these gaps would enable future research to design hybrid financial systems that not only enhance efficiency but also strengthen MSMEs' contribution to global sustainability goals

4. Conclusions

This systematic literature review concludes that digitalization plays a crucial role in enhancing the quality, transparency, and accountability of MSME financial reporting in the green economy era. The adoption of digital systems improves data accuracy, supports sustainability and ESG disclosures, and strengthens stakeholder trust. However, significant challenges remain, particularly low digital literacy, limited technological infrastructure, and insufficient awareness of sustainable reporting frameworks, especially in developing economies. Therefore, future policies and managerial strategies should focus on strengthening digital capabilities, providing green digital incentives, and developing integrated sustainability reporting platforms to support the adoption of green digital accounting and promote sustainable MSME development.

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