International Conference on Sustainable Economics, Management, and Accounting (ICSEMA 2026)
International Community Service Proceedings
Vol. 02 Year 2026, Pg. 205-212

DIGITAL ACCOUNTING INFORMATION SYSTEMS FOR STRENGTHENING ESG IMPLEMENTATION AND SUSTAINABLE BUSINESS IN INDONESIAN SMES

Rini Widianingsih[1], Icuk Rangga Bawono[2], Azkia Husni Mubarok[3]
[1-3] Faculty of Economics and Business, Jenderal Soedirman University, Indonesia
[*]Email corresponding author: rini.widianingsih@unsoed.ac.id

Abstract

This paper presents an international community engagement program designed to strengthen Environmental, Social, and Governance (ESG) implementation and promote sustainable business practices among Indonesian Small and Medium-sized Enterprises (SMEs) through the adoption of Digital Accounting Information Systems (DAIS). The program was conducted at Nutsafir Cookies SME using a participatory capacity-building approach that included preliminary assessment, training, technical assistance, mentoring, and evaluation. The intervention focused on improving the enterprise's capability to integrate financial and non-financial information, including environmental, social, and governance indicators, into a digital accounting system supported by Environmental Management Accounting (EMA). The results demonstrate that the program enhanced participants' understanding of digital accounting, ESG implementation, and sustainability reporting while improving accounting transparency and the systematic documentation of sustainability-related activities. The implementation of DAIS enabled the enterprise to strengthen sustainability performance evaluation, support informed managerial decision-making, and improve communication with stakeholders and business partners. Furthermore, the integrated framework developed through this program provides a practical and replicable model for SMEs seeking to accelerate digital transformation, enhance ESG implementation, and achieve long-term business sustainability. The findings highlight the important role of digital accounting innovation in improving organizational resilience and competitiveness in increasingly sustainability-oriented markets.

Keywords: **Digital Accounting Information Systems; Environmental, Social, and Governance (ESG); Environmental Management Accounting; Business Sustainability; Indonesian SMEs.**

INTRODUCTION

Micro, Small, and Medium Enterprises (SMEs) constitute the backbone of the global economy, accounting for approximately 90% of all businesses and generating more than 50% of worldwide employment (World Bank, 2023). In Indonesia, SMEs contribute over 60% of the national Gross Domestic Product (GDP) and absorb approximately 97% of the workforce, making them a fundamental driver of economic growth and social development. However, increasing globalization, digital transformation, and growing stakeholder awareness of sustainability have created new challenges for Indonesian SMEs. Beyond achieving financial performance, businesses are increasingly expected to demonstrate environmental responsibility, social inclusiveness, and sound governance practices to remain competitive in domestic and international markets (OECD, 2023).

The Environmental, Social, and Governance (ESG) framework has emerged as an internationally recognized approach for evaluating organizational sustainability and long-term value creation. ESG practices encourage organizations to integrate environmental protection, social

responsibility, and ethical governance into their strategic decision-making processes. Numerous studies have demonstrated that effective ESG implementation contributes to improved operational performance, enhanced corporate reputation, increased investor confidence, stronger stakeholder engagement, and better risk management (Friede et al., 2015). Furthermore, ESG practices are becoming increasingly important for SMEs as customers, supply chain partners, and finance providers demand greater sustainability information and transparency. Consequently, implementing ESG practices enhances SMEs' readiness to participate in global value chains and improve access to sustainable finance (IFAC, 2023). Despite the growing importance of ESG, many Indonesian SMEs encounter significant obstacles in adopting sustainability-oriented business practices. The adoption of digital accounting systems can assist SMEs in collecting environmental data, monitoring resource consumption, and supporting sustainability reporting, thereby strengthening ESG implementation and long-term business sustainability (OECD, 2023). Most SMEs continue to rely on conventional accounting systems that focus primarily on financial transactions while overlooking environmental expenditures, social contributions, and governance indicators required for comprehensive sustainability assessment. Consequently, sustainability initiatives are often implemented informally without appropriate documentation or measurable performance indicators, limiting SMEs' ability to communicate their sustainability achievements to stakeholders.

The rapid advancement of digital technologies has transformed accounting from a traditional financial recording function into a strategic information management system capable of supporting sustainable business development. Digital Accounting Information Systems (DAIS) support organizations by collecting, processing, and communicating financial and operational information in a timely and reliable manner, thereby enhancing managerial decision-making and organizational performance (Romney et al., 2021). Beyond improving accounting efficiency, digital accounting systems facilitate environmental cost tracking, resource consumption monitoring, ESG performance measurement, and sustainability reporting. Recent research suggests that digital accounting technologies play a critical role in strengthening sustainability accounting, enhancing organizational transparency, and supporting sustainability reporting and integrated reporting practices aligned with emerging global sustainability standards (Lodhia et al., 2025). Environmental Management Accounting (EMA) further complements Digital Accounting Information Systems by providing organizations with tools to identify, measure, analyze, and manage environmental costs associated with business operations. Environmental Management Accounting (EMA) enables organizations to identify environmental costs that are often hidden in conventional accounting systems, improve resource efficiency, support cleaner production, and facilitate environmentally informed managerial decision-making (Christ & Burritt, 2013; Burritt et al., 2023). Several empirical studies have reported that the adoption of Environmental Management Accounting (EMA) improves environmental performance, stimulates green innovation, enhances operational efficiency, and contributes to long-term organizational sustainability (Gerged et al., 2024; Ngoc, 2024). Similarly, sustainability accounting information systems facilitate the systematic collection of ESG indicators, allowing organizations to prepare sustainability reports that satisfy the increasing information demands of regulators, investors, financial institutions, and consumers (Gerged et al., 2024).

Previous studies have also demonstrated that digital transformation significantly influences accounting quality and organizational sustainability. For example, Moll and Yigitbasioglu (2019) found that digital technologies fundamentally reshape management accounting by enhancing data integration and supporting strategic decision-making. Similarly, Antonini (2024) argued that accounting digitalization strengthens sustainability accounting, improves information integration, and supports organizational decision-making for environmental sustainability. Reported that digital transformation improves SMEs' sustainability performance by increasing operational flexibility, innovation capability, and information quality. Meanwhile, Gerged et al. (2024) emphasized that digital technologies have become essential enablers of sustainability accounting, ESG reporting, and corporate assurance systems. Nevertheless, most existing studies concentrate on large

corporations, whereas research concerning Digital Accounting Information Systems for ESG implementation among SMEs, particularly in developing countries such as Indonesia, remains relatively limited. This gap highlights the need for practical initiatives that assist SMEs in integrating digital accounting with sustainability management.

To address this issue, Digital Accounting Information Systems can serve as a strategic platform for strengthening ESG implementation within Indonesian SMEs. By integrating accounting information with environmental, social, and governance indicators, SMEs can improve financial transparency, monitor sustainability performance, identify environmental costs, and support evidence-based managerial decision-making. Furthermore, digital accounting systems facilitate sustainability reporting, enabling SMEs to enhance accountability, increase stakeholder confidence, and improve competitiveness in increasingly sustainability-oriented markets.

Therefore, this community engagement program aims to strengthen ESG implementation and sustainable business practices through the adoption of Digital Accounting Information Systems in Indonesian SMEs. The program provides practical training, technical assistance, and mentoring in digital accounting, sustainability accounting, environmental management accounting, and ESG reporting. Through this integrated approach, participating SMEs are expected to enhance accounting capabilities, improve sustainability governance, strengthen organizational resilience, and increase long-term business competitiveness.

The novelty of this community engagement initiative lies in its integration of Digital Accounting Information Systems, Environmental Management Accounting, ESG implementation, and sustainable business development within a single empowerment framework specifically designed for Indonesian SMEs. Unlike conventional community service programs that generally focus on bookkeeping improvement or digital marketing, this program introduces a sustainability-oriented digital accounting model capable of integrating financial information with environmental, social, and governance performance indicators. This approach not only contributes to strengthening sustainable business practices but also provides a replicable model that can support broader ESG implementation among Indonesian SMEs.

LITERATURE REVIEW

A. Digital Accounting Information Systems

Digital Accounting Information Systems (DAIS) have become an essential component of modern business management by integrating financial and non-financial information into a unified digital platform. Unlike conventional accounting systems that primarily focus on financial transactions, DAIS facilitates real-time data processing, improves reporting accuracy, and supports managerial decision-making through comprehensive information management (Moll & Yigitbasioglu, 2019). The adoption of digital accounting technologies enables organizations to increase operational efficiency, enhance transparency, and strengthen organizational accountability. For Small and Medium-sized Enterprises (SMEs), digital accounting systems provide an opportunity to improve financial management while supporting long-term strategic planning and sustainable business development.

Recent developments in digital accounting have expanded the role of accounting systems beyond financial reporting toward sustainability management. Digital accounting systems enable organizations to monitor environmental, social, and governance (ESG) performance, improve sustainability disclosure, and strengthen accountability through integrated reporting. These systems have become strategic tools for improving decision-making quality while enhancing transparency and stakeholder confidence (Gerged et al., 2024).

B. Environmental, Social, and Governance (ESG) Implementation

Environmental, Social, and Governance (ESG) has emerged as a comprehensive framework for evaluating organizational performance beyond traditional financial indicators. ESG implementation promotes environmental protection, social responsibility, and sound corporate

governance while encouraging organizations to balance economic objectives with sustainable development (IFAC, 2023). The environmental dimension emphasizes efficient resource utilization and environmental conservation, the social dimension focuses on employee welfare, customer responsibility, and community engagement, whereas the governance dimension promotes accountability, ethical leadership, and transparent decision-making.

For SMEs, ESG implementation has become increasingly important for improving corporate reputation, stakeholder trust, and long-term competitiveness, particularly for businesses seeking access to international markets (Gerged et al., 2024). However, many SMEs continue to experience significant barriers in implementing ESG and sustainability reporting due to financial constraints, limited technological infrastructure, inadequate human resources, and insufficient knowledge of sustainability reporting requirements (O'Reilly et al., 2023).

C. Environmental Management Accounting

Environmental Management Accounting (EMA) is an accounting approach that incorporates environmental information into organizational planning, control, and decision-making processes. Environmental Management Accounting (EMA) assists organizations in identifying environmental costs, improving resource efficiency, and supporting environmentally informed managerial decision-making, thereby contributing to more sustainable business operations (Qian et al., 2018). Compared with conventional accounting systems, EMA provides more comprehensive information by integrating both financial and environmental performance indicators.

The integration of EMA with Digital Accounting Information Systems allows organizations to systematically collect, process, and analyze sustainability-related information. This integration supports green technology innovation and enhances environmental performance by enabling managers to utilize environmental information more effectively in strategic decision-making (Huynh & Nguyen, 2024).

D. Digital Accounting Information Systems and Business Sustainability

Digital Accounting Information Systems contribute to organizational performance by providing timely, accurate, and integrated financial information that enhances transparency, supports real-time monitoring, and improves strategic managerial decision-making (Moll & Yigitbasioglu, 2019).Through digital platforms, organizations can monitor ESG indicators, evaluate sustainability performance, and prepare sustainability reports that meet stakeholder expectations.

Furthermore, integrating financial and non-financial information into digital accounting systems enhances organizational transparency and accountability while improving the credibility of sustainability reporting (Gerged et al., 2024). For export-oriented SMEs, this capability strengthens competitiveness in increasingly sustainability-oriented global markets.

E. International Community Service

International community service represents an important mechanism for transferring scientific knowledge and technological innovation from universities to society while strengthening collaboration with community partners. Through training, mentoring, technical assistance, and collaborative problem-solving, universities can support SMEs in adopting innovative management practices that improve organizational capability, productivity, and long-term competitiveness. Such activities also contribute to achieving sustainable development by facilitating the implementation of knowledge-based business practices.

Within the context of sustainability, international community service provides an effective platform for introducing Digital Accounting Information Systems, Environmental Management Accounting, and ESG implementation to SMEs. Capacity-building activities improve participants' competencies in digital accounting, sustainability performance measurement, and sustainability reporting while encouraging the systematic integration of financial and non-financial information. According to IFAC (2023), improving organizational transparency and accountability is essential for

strengthening sustainability performance. Likewise, Gerged et al. (2024) emphasize that SMEs require practical support and institutional collaboration to overcome barriers to ESG implementation. Therefore, international community service serves as an effective approach for accelerating digital transformation, strengthening ESG practices, and promoting sustainable business development among Indonesian SMEs.

F. Problems Identified

Problem 1. Limited Adoption of Digital Accounting Information Systems

Many Indonesian SMEs still rely on conventional accounting practices that primarily record financial transactions. The absence of an integrated Digital Accounting Information System (DAIS) limits the systematic management of financial and non-financial information, reduces accounting efficiency, and constrains managerial decision-making for sustainable business development.

Problem 2. Inadequate Integration of ESG Practices into Accounting Systems

Although many SMEs have implemented environmental, social, and governance (ESG) activities in their daily operations, these practices are often not systematically measured, documented, or reported. The lack of ESG integration within accounting information systems makes it difficult for SMEs to evaluate sustainability performance, prepare sustainability reports, demonstrate accountability to stakeholders, and strengthen long-term business competitiveness.

RESEARCH METHODS

The main problems identified during the preliminary assessment and the corresponding solutions implemented through the international community service program. The first problem relates to the limited adoption of Digital Accounting Information Systems (DAIS), which hinders SMEs from systematically managing financial and non-financial information required for effective business management and sustainability-oriented decision-making. To address this issue, the program introduced an integrated digital accounting system incorporating Environmental Management Accounting (EMA) to improve the recording, monitoring, and reporting of both financial and ESG-related information.

The second problem concerns the inadequate integration of Environmental, Social, and Governance (ESG) practices into the accounting system. Although SMEs have implemented various sustainability-related activities, these practices are often undocumented and lack standardized performance measurement and reporting. Therefore, the program provided training and continuous mentoring on ESG implementation, sustainability performance measurement, and sustainability reporting. This approach was expected to enhance organizational transparency, strengthen accountability, and improve the competitiveness of Indonesian SMEs through the effective utilization of Digital Accounting Information Systems. The identified problems and corresponding solutions are presented in Table 1.

Table 1. Problems and Proposed Solutions

NO	Problems Identified	Problems Identified
1	Limited adoption of Digital Accounting Information Systems results in fragmented financial and non-financial information and weak support for managerial decision-making.	Develop and implement a Digital Accounting Information System integrated with financial and sustainability information to improve accounting efficiency and decision-making.

2	ESG practices are not systematically integrated into accounting processes, limiting sustainability measurement and reporting.	Provide training and mentoring on ESG implementation, Environmental Management Accounting (EMA), sustainability reporting, and ESG documentation using the Digital Accounting Information System.

RESULTS AND DISCUSSION

The international community service program successfully addressed the identified problems through the implementation of Digital Accounting Information Systems (DAIS) and ESG capacity-building activities. The outcomes of each intervention are summarized in Table 2.

Table 2. Results of Community Service Activities

Problem	Solution Implemented	Result achieved
Limited adoption of Digital Accounting Information Systems (DAIS).	Introduction and implementation of a Digital Accounting Information System integrated with Environmental Management Accounting (EMA).	Participants were able to record financial and non-financial information systematically, improving accounting efficiency, data accuracy, and managerial decision-making.
Inadequate integration of ESG practices into accounting systems.	Training and continuous mentoring on ESG implementation, sustainability performance measurement, and sustainability reporting.	Participants improved their understanding of ESG concepts and became capable of documenting and reporting environmental, social, and governance activities more systematically.

The implementation of the Digital Accounting Information System significantly improved accounting practices within the SME. The integration of financial and non-financial information enabled more comprehensive business records, supporting better monitoring of organizational performance and providing reliable information for managerial decision-making. These findings indicate that digital accounting serves not only as a financial recording tool but also as an important instrument for improving organizational transparency and operational efficiency.

Furthermore, the ESG capacity-building activities enhanced participants' knowledge and practical skills in sustainability management. Through training and mentoring, the enterprise was able to identify environmental, social, and governance activities and integrate them into routine accounting processes. As a result, sustainability information became more structured and readily available for internal evaluation and future sustainability reporting.

Overall, the integration of Digital Accounting Information Systems with ESG implementation contributed to strengthening business sustainability by improving accounting quality, organizational accountability, and sustainability performance. The program also demonstrates a practical framework that can be replicated by other Indonesian SMEs seeking to accelerate digital transformation and improve long-term competitiveness through sustainability-oriented business management.

CONCLUSION

This international community service program demonstrates that the implementation of a Digital Accounting Information System (DAIS), combined with Environmental, Social, and

Governance (ESG) capacity-building activities, can effectively strengthen accounting practices and promote sustainable business development among Indonesian SMEs. The integration of financial and non-financial information into a digital accounting platform improved accounting transparency, facilitated the systematic documentation of ESG-related activities, and supported more informed managerial decision-making.

In addition, training and continuous mentoring enhanced participants' understanding of ESG principles, Environmental Management Accounting (EMA), and sustainability reporting. These activities enabled the enterprise to better measure sustainability performance, improve organizational accountability, and communicate sustainability achievements to stakeholders and business partners.

Overall, the program provides a practical and replicable framework for integrating Digital Accounting Information Systems with ESG implementation to support sustainable business management. The findings highlight the importance of digital accounting innovation in strengthening organizational resilience, improving competitiveness, and accelerating the sustainable transformation of Indonesian SMEs.

Future community service programs are recommended to expand the implementation of this framework to a wider range of SMEs and evaluate its long-term impact on ESG performance, digital transformation, and business sustainability across different industrial sectors.

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