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STRENGTHENING ESG IMPLEMENTATION AND BUSINESS SUSTAINABILITY THROUGH DIGITAL ACCOUNTING INFORMATION SYSTEMS: AN INTERNATIONAL COMMUNITY ENGAGEMENT PROGRAM AT NUTSAFIR COOKIES SME, INDONESIA

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Abstract

This study presents an international community engagement program aimed at strengthening Environmental, Social, and Governance (ESG) implementation and enhancing business sustainability through the adoption of a Digital Accounting Information System (DAIS) at Nutsafir Cookies SME in Indonesia. The program addresses the limited integration of environmental, social, and governance information into conventional accounting practices, which constrains sustainability performance evaluation and reporting. The intervention employed a capacity-building approach consisting of training, technical assistance, and mentoring on digital accounting, Environmental Management Accounting (EMA), ESG performance measurement, and sustainability reporting. By integrating financial and non-financial information into a digital accounting platform, the program improved participants' understanding of sustainability-oriented accounting practices and supported more systematic recording of ESG-related activities. The initiative is expected to enhance accounting transparency, strengthen sustainability performance assessment, improve stakeholder communication, and increase the enterprise's competitiveness in both domestic and international markets. The program's value lies in its integrated framework that combines digital accounting, environmental management accounting, ESG implementation, and sustainability reporting into a practical model for SME capacity development. This framework provides a replicable approach that can support the sustainable transformation of other SMEs seeking to improve long-term resilience and competitiveness through digital accounting innovation.

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

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a pivotal role in economic growth by generating employment opportunities, promoting innovation, and contributing significantly to national GDP. In Indonesia, MSMEs account for more than 99% of all business entities and contribute substantially to economic resilience. However, increasing global awareness of sustainable development has shifted business performance evaluation beyond financial indicators toward broader sustainability dimensions, including Environmental, Social, and Governance (ESG) practices. ESG implementation has become an essential strategy for improving organizational transparency, stakeholder trust, corporate reputation, and long-term competitiveness, particularly for export-oriented SMEs (Gerged et al., 2024; IFAC, 2023).

The rapid advancement of digital technologies has transformed accounting practices from conventional financial recording into integrated information systems capable of supporting sustainability management. Digital Accounting Information Systems (DAIS) enable organizations to capture, process, and report both financial and non-financial information in real time. Beyond

improving operational efficiency, these systems facilitate environmental cost management, social performance monitoring, governance reporting, and sustainability disclosure, thereby supporting ESG implementation. Recent studies highlight that digital accounting technologies are becoming key enablers of sustainability accounting and integrated reporting, allowing organizations to improve decision-making quality while enhancing accountability and transparency (Gerged et al., 2025; Moll & Yigitbasioglu, 2019).

Environmental Management Accounting (EMA), which integrates environmental information into accounting systems, has gained considerable attention as an effective approach for supporting sustainable business practices. EMA assists organizations in identifying environmental costs, improving resource efficiency, reducing waste, and promoting environmentally responsible decision-making. Previous studies have demonstrated that integrating environmental management accounting with digital accounting systems positively influences organizational sustainability performance, operational efficiency, and green innovation (Qian et al., 2018; Huynh & Nguyen, 2024). Moreover, digital accounting systems facilitate the systematic collection of ESG-related information, enabling SMEs to prepare sustainability reports and respond to increasing stakeholder demands for environmental and social accountability. Consequently, many SMEs still rely on conventional bookkeeping systems that primarily focus on financial transactions while neglecting environmental costs, social contributions, and governance indicators essential for sustainable business management.

Nutsafir Cookies SME, operating under CV. Safir Indo Raya in Mataram, West Nusa Tenggara, Indonesia, represents an excellent example of an enterprise with substantial sustainability potential. Established in 2012, the company produces healthy grain-based cookies using locally sourced agricultural products without preservatives, artificial colors, or artificial sweeteners. The company has obtained Halal and BPOM certifications, received the Best Halal SME Award in Indonesia, and successfully entered international markets through the Shopee Export Program. Furthermore, Nutsafir Cookies demonstrates a strong social commitment by employing 100% local women in its production process while empowering local farmers through sustainable sourcing practices. These characteristics indicate that the enterprise has already embraced several ESG principles, particularly within the social and governance dimensions, although these practices have not yet been systematically documented through an integrated digital accounting information system.

Preliminary observations conducted with the partner revealed that the company's accounting practices remain focused primarily on conventional financial recording. Environmental expenditures, resource consumption, waste management costs, social performance indicators, and governance information are not systematically recorded or integrated into the accounting process. As a result, the enterprise faces challenges in measuring sustainability performance, preparing ESG-related reports, and communicating its sustainability achievements to stakeholders, investors, and international business partners. This limitation may reduce opportunities to strengthen competitive advantage in increasingly sustainability-oriented global markets.

To address these challenges, this international community engagement program introduces the implementation of a Digital Accounting Information System designed to support ESG implementation and business sustainability at Nutsafir Cookies SME. The program combines training, technical assistance, and mentoring activities aimed at improving participants' competencies in digital accounting, environmental management accounting, ESG performance measurement, and sustainability reporting. By integrating financial and non-financial information into a digital accounting platform, the program is expected to enhance accounting transparency, improve sustainability performance evaluation, strengthen ESG implementation, and increase the company's competitiveness in domestic and international markets.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

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). H

C. Environmental Management Accounting

Environmental Management Accounting (EMA) is an accounting approach that incorporates environmental information into organizational planning, control, and decision-making processes. EMA assists organizations in identifying environmental costs, improving resource efficiency, reducing waste, and promoting environmentally responsible 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 innovation, improves operational efficiency, and strengthens sustainability performance by enabling managers to make more informed strategic decisions (Huynh & Nguyen, 2024).

D. Digital Accounting Information Systems and Business Sustainability

Business sustainability requires organizations to achieve long-term economic performance while simultaneously creating positive environmental and social impacts. Digital Accounting Information Systems contribute significantly to sustainable business management by providing timely, accurate, and integrated information for strategic 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 serves as an effective mechanism for transferring knowledge and technology from higher education institutions to community partners while promoting sustainable business development. Through training, mentoring, and technical assistance, universities can support Small and Medium-sized Enterprises (SMEs) in adopting innovative management practices that improve organizational performance and competitiveness. In the context of sustainability, international community engagement facilitates the implementation of Digital Accounting Information Systems (DAIS) and Environmental, Social, and Governance (ESG) practices to strengthen transparency, accountability, and long-term business resilience.

Despite its strong business potential, Nutsafir Cookies SME faces two major challenges that hinder its sustainable development. First, the enterprise has not yet implemented an integrated Digital Accounting Information System capable of systematically recording and managing both financial and non-financial information. The existing accounting practices remain focused on conventional financial bookkeeping, making it difficult to monitor environmental expenditures, social contributions, governance indicators, and overall sustainability performance. Second, although the company has already demonstrated several ESG practices—such as empowering local women, sourcing local agricultural products, and producing healthy food products—these activities have not been systematically measured, documented, or reported according to ESG principles. Consequently, the enterprise encounters difficulties in evaluating sustainability performance, preparing ESG reports, and communicating its sustainability achievements to stakeholders and international business partners.

To address these challenges, this international community service program integrates Digital Accounting Information Systems (DAIS), Environmental Management Accounting (EMA), ESG implementation, and sustainability reporting through training, technical assistance, and continuous mentoring. The program is expected to improve participants' competencies in digital accounting, strengthen ESG implementation, enhance accounting transparency, and increase the competitiveness of Nutsafir Cookies SME in both domestic and international markets (IFAC, 2023; Gerged et al., 2024).

RESEARCH METHODS

This international community service program employed a participatory capacity-building approach involving training, technical assistance, mentoring, and evaluation. The program was implemented at Nutsafir Cookies SME, Indonesia, with the objective of strengthening Environmental, Social, and Governance (ESG) implementation and improving business sustainability through the adoption of a Digital Accounting Information System (DAIS). The intervention was designed based on an initial needs assessment to identify the enterprise's primary challenges related to digital accounting practices and ESG implementation. The identified problems and corresponding solutions are presented in Table 1.

Table 1. Problems and Proposed Solutions

NO	Problems Identified	Problems Identified

1	The enterprise has not yet implemented an integrated Digital Accounting Information System capable of recording both financial and non-financial information, resulting in limited monitoring of environmental, social, and governance performance.	Develop and introduce a Digital Accounting Information System integrated with Environmental Management Accounting (EMA) to facilitate systematic recording, monitoring, and reporting of financial and ESG-related information.
2	Existing ESG practices have not been systematically measured, documented, or reported, making it difficult to evaluate sustainability performance and communicate sustainability achievements to stakeholders and international business partners	Conduct training and continuous mentoring on ESG implementation, sustainability performance measurement, and sustainability reporting to improve organizational transparency, accountability, and business competitiveness.

Based on the identified problems, the community service activities were organized into four sequential stages. The first stage involved a preliminary assessment through observation and discussions with the SME management to identify existing accounting practices, digital readiness, and ESG-related activities. The second stage consisted of capacity-building workshops covering Digital Accounting Information Systems, Environmental Management Accounting, ESG concepts, and sustainability reporting. The third stage focused on technical assistance and mentoring to support the implementation of the digital accounting system, integrate financial and non-financial data, and improve ESG documentation within the enterprise. Finally, the fourth stage involved monitoring and evaluation to assess participants' understanding, evaluate the effectiveness of the implemented system, and identify opportunities for continuous improvement.

This systematic approach ensures that the proposed solutions directly address the identified challenges while strengthening the SME's capability to implement sustainability-oriented accounting practices. Furthermore, the integration of digital accounting with ESG principles is expected to improve accounting transparency, support strategic decision-making, enhance sustainability performance, and strengthen the competitiveness of Nutsafir Cookies SME in both domestic and international markets.

RESULTS AND DISCUSSION

The international community service program was successfully implemented at Nutsafir Cookies SME through four main stages: preliminary assessment, capacity-building training, technical assistance and mentoring, and monitoring and evaluation. The program aimed to strengthen the implementation of Environmental, Social, and Governance (ESG) principles by integrating a Digital Accounting Information System (DAIS) into the enterprise's accounting practices.

A. Preliminary Assessment

The initial assessment identified that the accounting practices at Nutsafir Cookies SME were primarily limited to conventional financial bookkeeping. Financial transactions were recorded manually, while environmental expenditures, resource utilization, social contributions, and governance-related information were not systematically documented. As a result, the enterprise experienced difficulties in measuring sustainability performance and preparing ESG-related reports. Although the company had already implemented several sustainable business practices, including the use of locally sourced raw materials, the empowerment of local women workers, and compliance with Halal and BPOM

certification standards, these activities had not yet been integrated into a comprehensive sustainability reporting system.

These findings indicate that the enterprise possessed strong ESG potential but required an integrated digital accounting system capable of recording both financial and non-financial information to support strategic decision-making and sustainability reporting.

B. Capacity Building on Digital Accounting and ESG

The second stage involved training sessions designed to improve participants' knowledge of Digital Accounting Information Systems, Environmental Management Accounting (EMA), ESG implementation, and sustainability reporting. The training introduced the concept of integrating financial accounting with environmental and social information, enabling participants to understand how accounting systems can support sustainable business management.

Participants actively engaged in discussions regarding ESG indicators relevant to SMEs, environmental cost identification, governance documentation, and sustainability disclosure. The training also demonstrated practical examples of recording environmental expenditures, monitoring social contributions, and documenting governance activities using digital accounting tools.

The training significantly improved participants' awareness of the importance of integrating ESG information into routine accounting practices. Participants recognized that digital accounting extends beyond financial reporting by providing valuable information for sustainability performance evaluation and stakeholder communication.

C. Technical Assistance and System Implementation

Following the training, technical assistance and mentoring were conducted to facilitate the implementation of the Digital Accounting Information System within Nutsafir Cookies SME. The mentoring process focused on integrating financial and non-financial information into a single accounting framework. Participants received direct guidance on classifying environmental costs, documenting social responsibility activities, recording governance-related information, and organizing sustainability data for future reporting purposes.

The implementation process also emphasized the adoption of Environmental Management Accounting (EMA) principles to support resource efficiency and improve environmental performance measurement. The integration of ESG information into the accounting system enabled the enterprise to establish more comprehensive business records that could support managerial decision-making and sustainability reporting.

Furthermore, continuous mentoring allowed participants to resolve technical challenges encountered during implementation while increasing their confidence in operating the digital accounting system independently.

D. Evaluation

The evaluation stage indicated positive outcomes in terms of participants' knowledge, technical skills, and understanding of sustainability-oriented accounting practices. Participants demonstrated improved competence in identifying ESG-related activities, recording environmental and social information, and utilizing digital accounting tools to support business operations.

The implementation of the Digital Accounting Information System also enhanced accounting transparency by integrating financial and non-financial information into a structured reporting framework. This integration provides management with more comprehensive information for evaluating organizational performance and supports future sustainability reporting required by investors, business partners, and other stakeholders.

Although the program achieved its primary objectives, continuous mentoring and periodic evaluation remain necessary to ensure the long-term sustainability of the implemented system. Future development may include the integration of automated

sustainability reporting dashboards and digital performance indicators that facilitate real-time ESG monitoring.

E. Discussion

The findings demonstrate that integrating Digital Accounting Information Systems with ESG implementation provides practical benefits for SMEs seeking sustainable business development. Digital accounting enables enterprises to move beyond conventional bookkeeping by incorporating environmental, social, and governance information into daily accounting activities. This integrated approach improves organizational transparency, strengthens accountability, and supports more informed managerial decision-making.

The implementation of Environmental Management Accounting further contributes to business sustainability by enabling enterprises to identify environmental costs, improve resource utilization, and reduce operational waste. These findings are consistent with previous studies indicating that digital accounting technologies enhance sustainability management and organizational performance (Moll & Yigitbasioglu, 2019; Gerged et al., 2025). Likewise, the capacity-building approach adopted in this community service program supports earlier findings that SMEs require continuous training and technical assistance to successfully implement ESG practices and sustainability reporting (Deb et al., 2023; Huynh & Nguyen, 2024).

Overall, this international community service program demonstrates that combining Digital Accounting Information Systems, Environmental Management Accounting, and ESG implementation within an integrated capacity-building framework can strengthen business sustainability while improving SMEs' competitiveness in domestic and international markets. The approach also provides a practical model that can be replicated by other SMEs aiming to accelerate digital transformation and sustainability-oriented business management.

CONCLUSION

This international community service program successfully strengthened the implementation of Environmental, Social, and Governance (ESG) practices at Nutsafir Cookies SME through the adoption of a Digital Accounting Information System (DAIS). The combination of training, technical assistance, and continuous mentoring improved participants' understanding of digital accounting, Environmental Management Accounting (EMA), and sustainability reporting. The integrated approach enhanced the enterprise's ability to systematically manage financial and non-financial information, improve accounting transparency, and support sustainability-oriented decision-making. Furthermore, the program provides a practical and replicable model for other SMEs seeking to accelerate digital transformation and strengthen business sustainability through ESG implementation.

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