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EMPOWERING NUTSAFIR COOKIES SME THROUGH DIGITAL ACCOUNTING INFORMATION SYSTEMS TO STRENGTHEN ESG IMPLEMENTATION AND BUSINESS SUSTAINABILITY

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Abstract

Micro, Small, and Medium Enterprises (SMEs) play a significant role in economic development but continue to face challenges in integrating digital accounting systems with Environmental, Social, and Governance (ESG) practices to support business sustainability. This international community engagement program aimed to empower Nutsafir Cookies SME through the implementation of a Digital Accounting Information System (DAIS) integrated with Environmental Management Accounting (EMA) to strengthen ESG implementation and improve sustainable business management. The program was conducted using a participatory approach consisting of four stages: preliminary assessment, capacity-building workshops, technical assistance and mentoring, and monitoring and evaluation. The activities focused on enhancing accounting digitalization, integrating financial and non-financial information, improving ESG awareness, and developing a practical framework for sustainability reporting. The implementation of the program improved participants' understanding of digital accounting, ESG principles, and environmental management accounting while strengthening the enterprise's ability to systematically record environmental, social, and governance information. The integration of DAIS with ESG practices enhanced accounting transparency, supported strategic decision-making, and increased organizational readiness to prepare sustainability reports and meet stakeholder expectations. This program offers a practical and replicable empowerment model for export-oriented SMEs seeking to accelerate digital transformation and strengthen business sustainability through integrated accounting and ESG practices.

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

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are recognized as the backbone of national economies, contributing significantly to employment generation, economic resilience, and inclusive growth. In Indonesia, MSMEs account for more than 99% of all business entities and contribute over 60% of the national Gross Domestic Product (GDP). Despite their strategic economic role, many SMEs continue to face challenges in maintaining long-term competitiveness due to limited digital capabilities, insufficient managerial information systems, and increasing market demands for sustainable business practices. As sustainability has become a global business imperative, SMEs are expected not only to achieve economic performance but also to demonstrate environmental responsibility, social commitment, and sound corporate governance through Environmental, Social, and Governance (ESG) practices (OECD, 2023; Gerged et al., 2024).

In recent years, ESG has emerged as an essential framework for enhancing corporate sustainability and stakeholder confidence. ESG implementation enables organizations to integrate environmental stewardship, social responsibility, and governance transparency into business strategies, thereby improving organizational resilience, risk management, and long-term value creation. Previous studies have demonstrated that ESG adoption positively influences firm performance, corporate reputation, access to finance, and investor confidence while supporting the achievement of the Sustainable Development Goals (SDGs) (Gerged et al., 2024). Nevertheless, SMEs often experience difficulties implementing ESG due to limited resources, inadequate knowledge, and the absence of systematic information management systems capable of integrating sustainability-related data into routine business operations (OECD, 2023).

The rapid development of digital technologies offers significant opportunities for SMEs to overcome these challenges through the adoption of Digital Accounting Information Systems (DAIS). Modern accounting information systems have evolved beyond traditional bookkeeping functions into strategic management tools capable of integrating financial and non-financial information to support organizational decision-making. Digital accounting systems facilitate real-time financial reporting, operational monitoring, environmental cost management, and sustainability performance measurement, thereby enhancing organizational transparency and accountability (Romney & Steinbart, 2021). Furthermore, digital accounting technologies improve information quality, increase operational efficiency, and provide reliable data for ESG reporting and sustainability disclosure (Gerged et al., 2024).

Environmental Management Accounting (EMA), as an extension of accounting information systems, provides organizations with mechanisms to identify, measure, and manage environmental costs associated with production activities. EMA enables firms to improve resource efficiency, minimize waste, reduce environmental impacts, and support environmentally responsible business decisions. Empirical evidence indicates that integrating Environmental Management Accounting with digital accounting systems contributes positively to green innovation, environmental performance, and sustainable business competitiveness (Qian et al., 2018; Huynh & Nguyen, 2024). Moreover, digital accounting systems facilitate the collection and analysis of ESG indicators, enabling organizations to prepare sustainability reports that meet increasing stakeholder expectations regarding corporate responsibility.

Despite these potential benefits, the implementation of Digital Accounting Information Systems integrated with ESG practices remains limited among Indonesian SMEs. Most SMEs continue to rely on conventional accounting systems that primarily focus on financial transactions while neglecting environmental costs, social contributions, and governance performance. This situation is mainly attributed to limited digital literacy, inadequate technological infrastructure, financial constraints, and insufficient knowledge regarding sustainability accounting and ESG reporting (Deb et al., 2023; IFAC, 2023). Consequently, many SMEs struggle to measure sustainability performance systematically and fail to communicate their sustainability initiatives effectively to customers, investors, and international business partners.

Nutsafir Cookies SME, operating under CV. Safir Indo Raya in Mataram, West Nusa Tenggara, Indonesia, represents a promising example of an SME with strong sustainability potential. Established in 2012, the company specializes in producing healthy grain-based cookies using locally sourced agricultural products without preservatives, artificial colors, or artificial sweeteners. The enterprise has successfully obtained Halal and BPOM certifications, received recognition as Indonesia's Best Halal SME, and expanded into international markets through export programs. In addition, the company demonstrates remarkable social responsibility by employing 100% local women in its production activities while strengthening local agricultural communities through partnerships with regional farmers. These practices reflect substantial alignment with ESG principles, particularly in the social and governance dimensions, although they have not yet been systematically documented through an integrated digital accounting information system.

A preliminary needs assessment conducted with the partner revealed several challenges that hinder the company's sustainability management. Accounting practices remain primarily focused on financial recording without systematically documenting environmental expenditures, resource utilization, waste management costs, employee welfare indicators, or governance-related information. Consequently, Nutsafir Cookies has yet to establish a structured mechanism for measuring ESG performance, preparing sustainability reports, or utilizing sustainability information as strategic business intelligence. These limitations may constrain the company's ability to strengthen international market competitiveness, meet sustainability-oriented customer expectations, and comply with emerging ESG reporting requirements.

To address these challenges, this international community engagement program aims to empower Nutsafir Cookies SME through the implementation of a Digital Accounting Information System that supports ESG implementation and business sustainability. The program encompasses capacity-building workshops, hands-on training, technical mentoring, and the development of a practical digital accounting framework capable of integrating financial records with environmental, social, and governance indicators. Through this initiative, the SME is expected to improve accounting transparency, strengthen sustainability governance, facilitate ESG reporting, and enhance long-term business resilience in increasingly competitive international markets.

The novelty of this community engagement program lies in its integration of Digital Accounting Information Systems, Environmental Management Accounting, ESG implementation, and business sustainability within a single empowerment model specifically designed for export-oriented SMEs. Unlike conventional community service programs that mainly focus on bookkeeping training or digital marketing, this initiative develops a sustainability-oriented digital accounting system that supports strategic decision-making and ESG performance measurement. The proposed model contributes not only to strengthening the sustainability capacity of Nutsafir Cookies but also offers a practical framework that can be replicated by other SMEs seeking to accelerate sustainable transformation through digital accounting innovation.

Problems Identified

Problem 1. Limited Implementation of Digital Accounting Information Systems

Nutsafir Cookies still relied on conventional accounting practices that primarily focused on financial transactions. The absence of an integrated Digital Accounting Information System (DAIS) limited the company's ability to manage financial and non-financial information efficiently, thereby reducing accounting transparency and the quality of managerial decision-making.

Problem 2. Inadequate Integration of Environmental, Social, and Governance (ESG) Information

Although Nutsafir Cookies had implemented several sustainability practices, such as utilizing locally sourced raw materials and empowering local women workers, these activities had not been systematically documented or measured using ESG indicators. Consequently, the enterprise was unable to evaluate sustainability performance or prepare ESG-based reports that meet stakeholder expectations.

Problem 3. Limited Knowledge and Capacity in Environmental Management Accounting and Sustainability Reporting

The partner lacked sufficient knowledge and technical capacity to identify environmental costs, measure sustainability performance, and prepare sustainability reports. Limited understanding of Environmental Management Accounting (EMA), ESG reporting, and digital accounting practices constrained the company's readiness to meet the increasing sustainability requirements of international markets.

RESEARCH METHODS

This international community engagement program employed a participatory approach involving active collaboration between the university team and Nutsafir Cookies SME. The program was designed to strengthen business sustainability by integrating a Digital Accounting Information System (DAIS), Environmental Management Accounting (EMA), and Environmental, Social, and Governance (ESG) practices into the enterprise's accounting and managerial processes. The implementation consisted of four sequential stages: preliminary assessment, capacity-building training, technical assistance and mentoring, and monitoring and evaluation. The preliminary assessment identified three major challenges that hindered the effective implementation of digital accounting and sustainability management. Based on these findings, appropriate intervention strategies were formulated as presented in Table 1.

Table 1. Problems Identified and Proposed Solutions

NO	Problems Identified	Proposed Solutions
1	Limited implementation of Digital Accounting Information Systems (DAIS), resulting in fragmented financial information and limited managerial decision support.	Develop and implement a Digital Accounting Information System capable of integrating financial and non-financial information into a unified accounting platform.
2	Inadequate integration of Environmental, Social, and Governance (ESG) information into business operations and accounting records.	Conduct ESG capacity-building workshops and integrate ESG indicators into the digital accounting system to facilitate sustainability measurement and reporting.
3	Limited knowledge and technical capacity in Environmental Management Accounting (EMA) and sustainability reporting.	Provide technical mentoring on EMA implementation, environmental cost identification, sustainability reporting, and the preparation of ESG-related information.

RESULTS AND DISCUSSION

The international community engagement program was successfully implemented through collaborative activities involving the university team and Nutsafir Cookies SME. The program focused on strengthening digital accounting practices, integrating Environmental, Social, and Governance (ESG) principles, and improving sustainability management through Environmental Management Accounting (EMA). The implementation addressed the three major problems identified during the preliminary assessment. The relationship between the identified problems, intervention activities, implementation process, and outcomes is summarized in Table 2.

Table 2. Implementation Results of the Community Engagement Program

Problem	Solution	Implementation Activities	Result Archieved

Limited adoption of Digital Accounting Information Systems (DAIS).	Development and implementation of a Digital Accounting Information System.	• Assessment of existing accounting practices. • Identification of accounting information requirements. • Design and introduction of a digital accounting system. • Training on digital transaction recording and financial reporting. • Assistance in daily system implementation.	• More systematic accounting records. • Improved accuracy and timeliness of financial information. • Better integration of financial data. • Improved managerial decision-making
Inadequate integration of ESG practices .	ESG capacity-building and integration of ESG indicators into accounting records.	• Introduction to ESG concepts. • Identification of environmental, social, and governance activities. • Development of ESG indicators relevant to the SME. • Integration of ESG information into the accounting system. • Guidance on sustainability reporting.	• Improved understanding of ESG principles. • Systematic documentation of ESG activities. • Increased readiness to prepare sustainability reports. • Greater organizational transparency and accountability.
Limited knowledge of Environmental Management Accounting (EMA) and sustainability reporting.	Technical mentoring on EMA implementation and sustainability reporting.	• Identification of environmental costs. • Training on Environmental Management Accounting. • Assistance in measuring environmental performance. • Preparation of	• Better identification of environmental costs. • Increased resource efficiency awareness. • Improved sustainability performance measurement. • Enhanced capability to communicate

		sustainability information. • Evaluation of reporting practices.	sustainability information to stakeholders.

Table 2 shows that each identified problem was addressed through targeted interventions combining digital technology, sustainability management, and capacity development. The implementation strategy emphasized not only the adoption of a digital accounting system but also the integration of ESG principles and Environmental Management Accounting into routine business operations. This integrated approach enabled the partner to strengthen accounting quality while simultaneously improving sustainability management.

CONCLUSION

This international community engagement program successfully demonstrated that integrating a Digital Accounting Information System (DAIS), Environmental Management Accounting (EMA), and Environmental, Social, and Governance (ESG) practices can strengthen sustainable business management in SMEs. The implementation of the program effectively addressed the three major challenges faced by Nutsafir Cookies SME, namely the limited adoption of digital accounting systems, the lack of ESG integration into accounting practices, and the limited capacity to implement Environmental Management Accounting and sustainability reporting.

Through a participatory approach involving capacity-building training, technical assistance, and continuous mentoring, the partner successfully improved its accounting practices by adopting a more integrated digital accounting system. The program also enhanced participants' understanding of ESG principles and facilitated the systematic documentation of environmental, social, and governance information. Furthermore, the implementation of Environmental Management Accounting enabled the enterprise to identify environmental costs, improve resource management, and support more informed strategic decision-making for sustainable business development.

The integration of financial and non-financial information within a unified digital accounting framework increased organizational transparency, strengthened accountability, and improved the enterprise's readiness to prepare sustainability reports that meet stakeholder expectations. These outcomes demonstrate that digital accounting innovation can serve as an effective instrument for enhancing business resilience, competitiveness, and long-term sustainability among export-oriented SMEs.

This community engagement initiative provides a practical and replicable empowerment model for integrating Digital Accounting Information Systems with ESG implementation and Environmental Management Accounting in Indonesian SMEs. Future programs are recommended to expand the application of this model to a wider range of SMEs and evaluate its long-term impact on ESG performance, digital transformation, business competitiveness, and sustainable development across different industrial sectors.

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