

DEVELOPING AN ACCOUNTING INFORMATION SYSTEM FOR GREEN ACCOUNTING AND ESG REPORTING TO ENHANCE SME SUSTAINABILITY

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Abstract

Small and Medium Enterprises (SMEs) increasingly face sustainability challenges due to growing stakeholder expectations for environmental responsibility, corporate transparency, and Environmental, Social, and Governance (ESG) performance. However, many SMEs continue to rely on conventional accounting practices that inadequately capture environmental and sustainability-related information, limiting their ability to implement Green Accounting and prepare ESG reports. This community engagement program aimed to develop an integrated Accounting Information System (AIS) that supports Green Accounting and ESG reporting to enhance SME sustainability. The program employed a participatory approach consisting of preliminary assessment, capacity-building workshops, technical training, participatory system development, continuous mentoring, and monitoring and evaluation. The developed accounting information system integrates financial and non-financial information, including environmental costs, ESG indicators, and sustainability performance data, into a unified digital platform. The implementation improved participants' understanding of Green Accounting and ESG principles, strengthened digital accounting competencies, enhanced the systematic recording of environmental and sustainability information, and increased organizational transparency for managerial decision-making. The integrated system also enabled more effective sustainability reporting while supporting resource efficiency and long-term business resilience. This program provides a practical and replicable model for integrating digital accounting, Green Accounting, and ESG reporting within SMEs, thereby contributing to sustainable business management and strengthening SME competitiveness in both domestic and international markets.

Keywords: Accounting Information System; Green Accounting; ESG Reporting; Sustainability; Small and Medium Enterprises (SMEs)

INTRODUCTION

Small and Medium Enterprises (SMEs) constitute the foundation of most national economies by generating employment, stimulating innovation, and contributing substantially to economic growth. According to the World Bank (2023), SMEs account for approximately 90% of businesses worldwide and contribute more than half of global employment. In Indonesia, SMEs contribute over 60% of the national Gross Domestic Product (GDP) and absorb approximately 97% of the labor force (OECD, 2023). Despite their significant economic contribution, many SMEs continue to face challenges in maintaining long-term competitiveness due to increasing stakeholder expectations regarding sustainability, environmental responsibility, and corporate transparency. Consequently, integrating sustainability into business management has become a strategic necessity rather than merely a regulatory obligation.

The concept of sustainable business has evolved beyond economic performance to encompass environmental stewardship, social responsibility, and ethical governance. These dimensions are commonly represented through the Environmental, Social, and Governance (ESG) framework, which has become an internationally recognized benchmark for assessing organizational sustainability. ESG implementation enables organizations to manage sustainability risks, improve stakeholder relationships, strengthen corporate reputation, and enhance long-term

financial performance (Gerged et al., 2024). Furthermore, investors, financial institutions, consumers, and international supply chain partners increasingly require ESG-related information to evaluate organizational sustainability and responsible business practices (IFAC, 2023).

Despite the growing importance of ESG, most SMEs encounter considerable barriers in implementing ESG practices and preparing sustainability reports. Limited financial resources, insufficient managerial expertise, lack of technological infrastructure, and inadequate sustainability reporting knowledge remain major obstacles to ESG adoption among SMEs, particularly in developing countries (OECD, 2023). Unlike large corporations that often have dedicated sustainability departments and well-established reporting systems, SMEs generally rely on conventional accounting practices focused primarily on financial reporting, resulting in limited disclosure of environmental, social, and governance information (O'Reilly et al., 2025). As a result, many sustainability initiatives undertaken by SMEs remain undocumented and cannot be effectively communicated to external stakeholders.

Green Accounting has emerged as an important accounting approach that supports sustainable business management by integrating environmental information into organizational accounting systems. Green Accounting enables enterprises to identify, measure, record, and report environmental costs associated with production activities, resource consumption, pollution prevention, waste management, and environmental conservation (Burritt & Schaltegger, 2014). By incorporating environmental costs into managerial decision-making, Green Accounting facilitates resource efficiency, cost reduction, environmental risk management, and sustainable business performance. Recent empirical studies have confirmed that Green Accounting positively influences environmental performance, corporate sustainability, and organizational competitiveness, particularly when supported by digital technologies (Huynh & Nguyen, 2024; Qian et al., 2018). Alongside Green Accounting, ESG reporting has become an increasingly important mechanism for communicating sustainability performance to stakeholders. ESG reports provide comprehensive information regarding an organization's environmental initiatives, employee welfare, community engagement, governance practices, and ethical business conduct. Nevertheless, SMEs often experience difficulties preparing ESG reports because sustainability information is dispersed across different operational activities and is not systematically integrated into existing accounting systems.

Recent developments in digital transformation offer significant opportunities to overcome these challenges through the implementation of Digital Accounting Information Systems. Modern Accounting Information Systems (AIS) have evolved from traditional bookkeeping applications into integrated management information systems capable of processing both financial and non-financial information. Digital AIS enables organizations to automate accounting processes, improve information accuracy, facilitate real-time reporting, and support strategic decision-making (Romney & Steinbart, 2021). More importantly, integrating Green Accounting and ESG reporting into digital accounting systems allows organizations to capture environmental expenditures, monitor sustainability indicators, generate ESG performance dashboards, and prepare sustainability reports efficiently (Gerged et al., 2024).

Several recent studies emphasize the strategic role of digital accounting technologies in advancing sustainability accounting. Moll and Yigitbasioglu (2019) argue that digital technologies fundamentally reshape management accounting by improving data integration and supporting evidence-based decision-making. Likewise, Deb et al. (2023) found that digital transformation significantly enhances SMEs' innovation capability and sustainability performance. Furthermore, Gerged et al. (2024) demonstrated that digital technologies have become essential enablers of sustainability accounting, integrated reporting, and assurance practices. However, most previous studies focus on large corporations or separately examine Green Accounting, ESG reporting, and accounting information systems. Research and community engagement initiatives that integrate these three components into a unified accounting information system specifically designed for SMEs remain relatively scarce, particularly in developing countries.

This gap highlights the need to develop an integrated Accounting Information System that supports both Green Accounting and ESG reporting for SMEs. Such a system enables SMEs to systematically collect, process, analyze, and report sustainability-related information while simultaneously improving accounting quality and managerial decision-making. The integration of environmental cost accounting, ESG performance indicators, and digital accounting technologies provides SMEs with practical tools for measuring sustainability performance, enhancing operational efficiency, strengthening stakeholder communication, and improving long-term business resilience.

Accordingly, this community engagement program aims to develop an integrated Accounting Information System for Green Accounting and ESG reporting to enhance SME sustainability. The program combines capacity building, technical training, participatory system development, and mentoring activities to assist SMEs in implementing digital accounting technologies that support environmental accounting, sustainability reporting, and ESG performance measurement. By strengthening accounting capabilities through digital innovation, the program is expected to improve sustainability governance, increase organizational transparency, facilitate ESG disclosure, and enhance SMEs' competitiveness in both domestic and international markets.

The novelty of this community engagement program lies in the development of an integrated digital Accounting Information System that simultaneously incorporates Green Accounting, ESG reporting, and sustainability performance measurement into a practical framework specifically designed for SMEs. Unlike most previous community engagement initiatives that emphasize bookkeeping improvement or digital marketing, this program introduces a sustainability-oriented accounting information system capable of generating both financial and non-financial information required for strategic decision-making and sustainability reporting. The proposed framework offers a scalable model that can be replicated by other SMEs seeking to accelerate sustainable transformation through digital accounting innovation.

METHODS

The preliminary assessment was conducted through observations, interviews, and reviews of existing accounting practices to identify the major challenges encountered by the SME in implementing sustainability-oriented accounting. The assessment revealed two major problems that hindered the enterprise from effectively managing environmental information and preparing sustainability reports. Based on these findings, appropriate intervention strategies were developed, as presented in Table 1.

Table 1. Problems Identified and Proposed Solutions

NO	Problems Identified	Proposed Solutions
1	Environmental information was not integrated into the existing accounting system. The SME relied on conventional bookkeeping that primarily recorded financial transactions, while environmental costs such as energy consumption, waste management, and resource utilization were not systematically identified or recorded.	Develop and implement an Environmental Management Accounting Information System (EMAIS) that integrates financial and environmental information, enabling systematic recording, monitoring, and analysis of environmental costs.
2	Limited knowledge and practical implementation of Environmental	Conduct capacity-building workshops and technical training on Environmental Management

	Management Accounting (EMA). Participants had limited understanding of environmental cost identification, performance measurement, and the utilization of environmental accounting information for managerial decision-making.	Accounting, including environmental performance identification, measurement, and the application of environmental information in managerial decision-making.
3	Limited utilization of digital accounting technology to support sustainability management. Existing accounting practices did not provide integrated information required for monitoring environmental performance, evaluating resource efficiency, and supporting sustainable business planning.	Develop digital accounting capabilities through participatory system development, practical training, and continuous mentoring to enable effective utilization of EMAIS for sustainability management and strategic decision-making.

Table 1 indicates that the identified problems were closely interconnected. The absence of integrated environmental information limited the implementation of Environmental Management Accounting, while inadequate digital capabilities reduced the effectiveness of sustainability management. Therefore, the community engagement program combined system development with capacity building to ensure that participants were able to implement Environmental Management Accounting Information Systems effectively in their daily business operations.

RESULTS AND DISCUSSION

The community engagement program was conducted to assist the SME in developing an integrated Accounting Information System (AIS) that supports Green Accounting implementation and ESG reporting. The program combined technical training, participatory system development, and continuous mentoring to strengthen sustainability-oriented accounting practices. Through collaborative implementation, the SME successfully improved its accounting processes by integrating financial and sustainability information into a unified digital platform. The overall implementation results are summarized in Table 2.

Table 2. Results of the Community Engagement Program

Problem	Solution Implemented	Implementation Activities	Result Achieved
The existing Accounting Information System was limited to conventional	Development and implementation of an integrated Accounting Information System	Assessment of existing accounting practices; system requirement analysis; system design; development of Green	Environmental costs and financial transactions were systematically integrated into one

financial recording incorporating Green Accounting modules; accounting system. and did not support Accounting. training on digital Participants improved Green Accounting accounting; technical their ability to identify, implementation. mentoring during system record, and analyze environmental costs, resulting in more accurate accounting information and improved managerial decision-making.
The enterprise had not implemented an integrated ESG reporting system, resulting in fragmented sustainability information. Development of ESG reporting modules integrated into the Accounting Information System. Identification of ESG indicators; development of ESG reporting features; ESG training; sustainability reporting workshops; mentoring on ESG data collection and report preparation. ESG information was systematically documented and integrated into the accounting system. The enterprise improved its capability to monitor sustainability performance, prepare ESG reports, and communicate sustainability achievements to stakeholders.

Table 2 demonstrates that the implementation of an integrated Accounting Information System effectively addressed both major challenges identified during the preliminary assessment. Rather than merely digitalizing bookkeeping activities, the system transformed accounting into a strategic management tool by integrating financial information with environmental and sustainability performance indicators. This integration strengthened organizational transparency, improved information quality, and enhanced the enterprise's readiness to implement sustainable business practices.

1. Development of an Accounting Information System for Green Accounting

The first intervention focused on developing an Accounting Information System capable of supporting Green Accounting implementation. Initial observations indicated that the SME relied on conventional bookkeeping practices that recorded only financial transactions, while environmental expenditures associated with production activities, resource consumption, packaging materials, and waste management were not systematically documented.

The implementation began with a comprehensive assessment of existing accounting procedures to identify information requirements and operational workflows. Based on the assessment findings, the university team collaboratively designed an integrated Accounting Information System tailored to the operational characteristics of the SME. The system was structured to capture both financial transactions and environmental cost information within a unified accounting database.

Training sessions introduced participants to Green Accounting concepts, environmental cost identification, and digital accounting procedures. Participants were guided in classifying environmental expenditures, recording resource utilization, and documenting waste management costs using the newly developed accounting system. Continuous technical mentoring ensured that the system could be implemented effectively in routine business operations while addressing practical challenges encountered during adoption.

The implementation significantly improved the quality of accounting information by integrating environmental cost data with financial records. Participants became more capable of monitoring resource utilization, identifying environmental expenditures, and utilizing accounting information for operational planning and cost control. The availability of comprehensive accounting information also strengthened managerial decision-making by providing more reliable evidence for evaluating both financial performance and environmental efficiency.

2. Integration of ESG Reporting into the Accounting Information System

The second intervention emphasized integrating ESG reporting into the Accounting Information System to improve sustainability performance measurement and organizational transparency. Before the program, sustainability-related information was dispersed across various operational activities and was not systematically documented, making ESG reporting difficult.

The implementation began with introducing ESG principles and identifying environmental, social, and governance activities already undertaken by the enterprise. Together with the SME, the implementation team developed relevant ESG indicators covering environmental management practices, employee welfare, community engagement, ethical business conduct, and governance practices. These indicators were subsequently incorporated into the Accounting Information System to facilitate continuous monitoring and reporting.

Hands-on workshops and mentoring sessions enabled participants to collect ESG-related information, classify sustainability data, and generate simple ESG reports directly from the accounting system. The integration of ESG modules reduced data fragmentation and improved consistency in sustainability documentation. Participants also gained practical experience in utilizing ESG information to communicate sustainability initiatives to customers, business partners, financial institutions, and other stakeholders.

The integration of ESG reporting into the Accounting Information System strengthened organizational transparency and accountability while supporting evidence-based sustainability management. The enterprise became better prepared to respond to increasing stakeholder expectations regarding responsible business practices and sustainability disclosure. Furthermore, integrating ESG information with financial accounting enhanced the organization's ability to evaluate sustainability performance comprehensively and to formulate long-term business strategies aligned with sustainable development principles.

Overall, the community engagement program demonstrates that developing an integrated Accounting Information System capable of supporting both Green Accounting

and ESG reporting provides significant benefits for SMEs. The integration of financial and non-financial information improved accounting quality, strengthened sustainability governance, enhanced organizational transparency, and supported strategic managerial decision-making. Beyond addressing the immediate needs of the partner enterprise, the developed framework offers a practical and replicable model that can assist other SMEs in accelerating digital transformation while improving sustainability performance and long-term business resilience.

The preparation of financial statements based on SAK UMKM (Indonesian Financial Accounting Standards for Micro, Small, and Medium Enterprises) provides a systematic framework that ensures transparency and accountability in reporting. By following these standards, businesses can present financial information that is consistent, comparable, and aligned with national accounting principles. This structured approach not only simplifies the reporting process for MSMEs NUTSAFIR Cookies Mataram Lombok but also enhances the reliability of the data, making it easier for stakeholders to evaluate the company's performance and financial position.

Implementing SAK UMKM in financial reporting's NUTSAFIR Cookies Mataram Lombok plays a crucial role in strengthening investor confidence. Investors are more likely to trust businesses that demonstrate compliance with recognized accounting standards, as it reduces the risk of misinformation and financial irregularities. Clear and standardized financial statements allow investors to make informed decisions, fostering long-term partnerships and potential capital growth. So far, the preparation of financial reports by NUTSAFIR Cookies Mataram Lombok has been guided by the UMKM SAK. Ultimately, adherence to SAK UMKM becomes a strategic tool for MSME's NUTSAFIR Cookies Mataram Lombok to build credibility, attract investment, and sustain business development in a competitive market.

Maintaining consumer trust in a cookie business requires consistent quality and transparency. Customers expect that every batch of cookies will meet the same standards of taste, freshness, and safety. To achieve this, NUTSAFIR Cookies Mataram Lombok must implement strict quality control, use reliable suppliers for ingredients, and ensure hygienic production processes. Clear labeling of ingredients and adherence to food safety regulations also reassure consumers that the products are safe and trustworthy.

Beyond product quality, building long-term trust involves strong communication and customer engagement. Providing responsive customer service, addressing feedback promptly, and being open about business practices foster a sense of reliability. Offering loyalty programs, eco-friendly packaging, and community involvement further strengthens the emotional connection with consumers. When NUTSAFIR Cookies Mataram Lombok customer's feel valued and confident in the brand's integrity, they are more likely to remain loyal and recommend the cookies to others, ensuring sustainable growth for the business.

CONCLUSION

This international community engagement program successfully developed and implemented an integrated Accounting Information System (AIS) that supports Green Accounting and ESG reporting to enhance SME sustainability. The program effectively addressed two key challenges identified during the preliminary assessment: the absence of an accounting information system capable of integrating environmental information and the lack of a systematic ESG reporting mechanism. Through a participatory approach involving technical training, system development, continuous mentoring, and evaluation, the SME strengthened its accounting capabilities while improving sustainability-oriented business management.

The implementation of the integrated AIS enabled the enterprise to systematically record financial transactions alongside environmental costs, thereby supporting the practical application

of Green Accounting. In addition, the integration of ESG indicators into the accounting system facilitated the collection, monitoring, and reporting of sustainability information, resulting in improved organizational transparency and greater readiness to communicate sustainability performance to stakeholders. The availability of integrated financial and non-financial information also enhanced evidence-based managerial decision-making and supported more effective sustainability governance.

This community engagement initiative demonstrates that integrating Green Accounting and ESG reporting into a digital Accounting Information System provides a practical approach for strengthening SME sustainability. The developed framework offers a scalable and replicable model that can be adopted by other SMEs seeking to improve accounting quality, sustainability reporting, and long-term business resilience through digital transformation. Future community engagement programs are recommended to expand the implementation of this integrated framework across different SME sectors and evaluate its long-term impact on sustainability performance, ESG disclosure quality, operational efficiency, and business competitiveness.

BIBLIOGRAPHY

- Antonini, C. (2024). Accounting digitalization in the quest for environmental sustainability. *Current Opinion in Environmental Sustainability*, 66, 101399.
- Burritt, R. L., Schaltegger, S., & Christ, K. L. (2023). Environmental Management Accounting: Developments over the last 20 years from a framework perspective. *Australian Accounting Review*, 33(3), 336–351.
- Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 5(4), 210–233.
- Gerged, A. M., Zahoor, N., & Cowton, C. J. (2024). Understanding the relationship between environmental management accounting and firm performance: The role of environmental innovation and stakeholder integration—Evidence from a developing country. *Management Accounting Research*, 62, 100865.
- Huynh, Q. L., & Nguyen, V. K. (2024). The role of Environmental Management Accounting in sustainability. *Sustainability*, 16(17), 7440.
- International Federation of Accountants. (2023). The state of play: Sustainability disclosure & assurance 2019–2021—Trends & analysis. IFAC.
- Lodhia, S., Farooq, M. B., Sharma, U., & Zaman, R. (2025). Digital technologies and sustainability accounting, reporting and assurance: Framework and research opportunities. *Meditari Accountancy Research*, 33(2), 417–441.
- Kim, S., & Ha, T. (2023). Influential Variables and Causal Relations Impact on Innovative Performance and Sustainable Growth of SMEs in Aspect of Industry 4.0 and Digital Transformation. *Sustainability*, 15(9), 7310.
- Moll, J., & Yigitbasioglu, O. (2019). The role of internet-related technologies in shaping the work of accountants: New directions for accounting research. *The British Accounting Review*, 51(6), 100833.
- Ngoc, T. T. (2024). Unlocking environmental management accounting and environmental performance: A mediated moderation model through green technology innovation and environmental strategy. *Meditari Accountancy Research*, 33(2), 733–758.
- O'Reilly, S., Mac an Bhaird, C., Gorman, L., & Brennan, N. M. (2023). Accounting practitioners' perspectives on small- and medium-sized enterprises' environmental sustainability reporting. *Journal of Applied Accounting Research*, 26(6), 26–46.
- Organisation for Economic Co-operation and Development. (2023). Assessing greenhouse gas emissions and energy consumption in SMEs: Towards a pilot dashboard of SME greening and

green entrepreneurship indicators (OECD SME and Entrepreneurship Papers No. 42). OECD Publishing.

Qian, W., Burritt, R. L., & Monroe, G. S. (2018). Environmental management accounting in local government: Functional and institutional imperatives. *Financial Accountability & Management*, 34(2), 148–165.

Romney, M. B., Steinbart, P. J., Summers, S. L., & Wood, D. A. (2021). *Accounting Information Systems* (15th ed.). Pearson.

Shaofeng Wang, José Paulo Esperança, Can digital transformation improve market and ESG performance? Evidence from Chinese SMEs, *Journal of Cleaner Production*, Volume 419, 2023, 137980,

World Bank. (2023). *Business Ready (B-READY): Corporate Sustainability and Business Environment* (atau laporan World Bank 2023 yang membahas green transition dan private sector competitiveness).