



Mentoring-Based Implementation of Accounting Information Systems for Enhancing MSMEs Financial Management in Magelang City, Indonesia

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ABSTRACT

Usaha Mikro, Kecil, dan Menengah (UMKM) sering menghadapi tantangan dalam menjaga pencatatan keuangan yang terstruktur, yang mengakibatkan terbatasnya pengendalian keuangan. Program ini bertujuan untuk meningkatkan kapasitas manajemen keuangan UMKM melalui implementasi Sistem Informasi Akuntansi (SIA) berbasis pendampingan yang disesuaikan dengan karakteristik bisnis di Kota Magelang, Indonesia. Program ini melibatkan 31 UMKM dari sektor kuliner, ritel, kelontong, jasa, dan aksesoris. Pendekatan pendampingan partisipatif berbasis bantuan berorientasi tindakan diterapkan, yang terdiri dari penilaian awal praktik pencatatan keuangan, identifikasi masalah pembukuan dan pengendalian internal, implementasi pembukuan digital secara bertahap, dan penguatan manajemen data berbasis *cloud* dan praktik pengendalian internal. Sebelum intervensi, sebagian besar UMKM bergantung pada pencatatan manual atau semi-manual yang terfragmentasi, tidak *real-time*, dan rentan terhadap kesalahan dan kehilangan data. Setelah pendampingan, mitra UMKM menunjukkan peningkatan kemampuan dalam memelihara catatan transaksi yang lebih terstruktur, memantau persediaan dan arus kas secara lebih sistematis, dan menyiapkan laporan keuangan sederhana untuk mendukung evaluasi bisnis. Program ini memfasilitasi pergeseran dari pencatatan administratif menuju pemanfaatan informasi keuangan untuk pengambilan keputusan operasional dan manajerial. Studi ini memberikan kontribusi berupa model pendampingan AIS yang kontekstual dan adaptif yang dirancang untuk usaha kecil dengan beragam tingkat literasi akuntansi, menyoroti bahwa adopsi AIS yang berkelanjutan di UMKM bergantung pada bantuan partisipatif, kesesuaian sistem, dan transformasi manajerial bertahap.

Micro, Small, and Medium Enterprises (MSMEs) often face challenges in maintaining structured financial records, resulting in limited financial control. This program aims to improve the financial management capacity of MSMEs through the implementation of a mentoring-based Accounting Information System (AIS) tailored to the characteristics of businesses in Magelang City, Indonesia. The program involved 31 MSMEs from the culinary, retail, grocery, service, and accessories sectors. A participatory, action-oriented assistance approach was implemented, consisting of an initial assessment of financial recording practices, identifying bookkeeping and internal control issues, gradually implementing digital bookkeeping, and strengthening cloud-based data management and internal control practices. Prior to the intervention, most



MSMEs relied on manual or semi-manual recordkeeping that was fragmented, non-real-time, and prone to errors and data loss. After the mentoring, MSME partners demonstrated improved capabilities in maintaining more structured transaction records, managing inventory and cash flow more systematically, and preparing simple financial reports to support business evaluation. This program facilitates a shift from administrative recording to the use of financial information for decision-making towards operational and managerial ones. This study contributes a contextual and adaptive AIS mentoring model designed for small businesses with varying levels of accounting literacy, highlighting that sustainable AIS implementation in MSMEs relies on participatory assistance, system harmonization, and gradual managerial transformation.

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INTRODUCTION

An Accounting Information System (AIS) is an essential infrastructure for transforming transaction data into standardized, reliable, and auditable financial information. For Micro, Small, and Medium Enterprises (MSMEs), implementing an AIS plays a strategic role in supporting compliance with the Financial Accounting Standards for Micro, Small, and Medium Entities (SAK EMKM), particularly regarding the exclusion of personal and business finances, which remains a fundamental weakness in MSMEs' manual record-keeping practices (Afriansyah et al., 2021; Osesoga et al., 2024; Rachman & Andriani, 2024). The absence of a structured system results in financial information not only losing accuracy but also its relevance as a basis for decision-making and business performance evaluation. Despite its recognized importance, the practical adoption of AIS among MSMEs remains uneven, indicating that technical availability alone does not guarantee effective utilization in small business environments.

Recent literature shows that implementing an AIS can improve the quality of financial reporting, strengthen internal controls, and reduce the risk of recording errors through the automation of core accounting processes, from account classification to the preparation of periodic financial reports. Furthermore, AIS enables a gradual transition from a cash basis to a more informative accrual basis for MSME management, while simultaneously improving measurement consistency and transaction traceability (Mediaty et al., 2025a; Yulianto et al., 2024). From a managerial perspective, access to real-time financial information through AIS, particularly cloud-based ones has been shown to improve the speed and quality of decision-making, particularly in cash flow management, product profitability analysis, and short-term business planning (Ismail & King, 2007). These studies collectively emphasize the technological and informational advantages of AIS; however, they predominantly examine adoption outcomes rather than the processes required to enable successful implementation among MSMEs with limited accounting capabilities (Alshamaila et al., 2013; Amidu et al., 2011).

In addition to supporting decision-making, AIS also directly contributes to MSMEs' business aspirations. The transparency and credibility of financial reports generated through AIS enhances trust in formal financial institutions and increases MSMEs' opportunities to access external financing (Handayani et al., 2023; Indarto et al., 2025). Integrating AIS with internal control mechanisms allows for early identification of financial and operational risks, thus improving MSMEs' capacity to maintain business stability in the current business environment. Nevertheless,

these expected benefits often remain unrealized in practice, particularly when MSMEs lack structured guidance and contextual assistance during system adoption.

However, empirical findings in Magelang City indicate significant implementation gaps. Most MSMEs in the culinary, retail, and service sectors still rely on manual or semi-manual, non-standardized record-keeping, with weak internal controls and accounting data management. This results in inaccurate, non-real-time financial information that is less reliable for managerial decision-making. This phenomenon reflects the paradox of MSME digitalization in Indonesia, where accounting technology is increasingly available, but adoption and assimilation rates remain low due to limited accounting literacy, human resources, and a non-contextual mentoring approach (Bappenas, 2020; Fizzanty & Maulana, 2024; Sari et al., 2024). This condition suggests that the primary challenge lies not only in technology availability but also in the absence of adaptive implementation support aligned with MSME operational realities.

Previous community service programs generally focused on simple financial record-keeping training or a partial introduction to accounting applications. While these initiatives contributed to improving basic bookkeeping awareness, prior programs largely emphasized short-term training or application introduction without integrating system design adaptation, internal control development, and sustained mentoring mechanisms. As a result, many MSMEs experienced difficulties maintaining system usage after training, indicating a gap between technology introduction and sustainable managerial adoption.

Existing studies and community service initiatives demonstrate the importance of accounting digitalization for MSMEs; however, limited attention has been given to integrated empowerment approaches that simultaneously address accounting literacy, system suitability, and behavioral adaptation during implementation. Consequently, a structured mentoring framework that connects technological tools with MSME managerial capacity remains underdeveloped in current practice (Barus, 2025).

This community service activity offers a novel approach to strengthening Accounting Information Systems (AIS). It is designed in a contextual and phased manner, integrating increased accounting literacy, designing a simple AIS tailored to business characteristics, strengthening internal controls, and providing practical implementation support. The key innovation lies in the emphasis on balancing the system with MSME capacity and sustainability mechanisms, so that the AIS functions not only as a recording tool but also as a strategic instrument for decision-making and business risk management. Therefore, this study proposes a contextual AIS empowerment model integrating literacy improvement, adaptive system design, and participatory behavioral assistance to support sustainable AIS adoption among MSMEs (Bharadwaj et al., 2013; Esmeray, 2016).

Based on the identified gaps, this community service activity aims to increase the capacity of MSMEs to implement an Accounting Information System that meets standards and operational needs, improve the quality of financial information as a basis for managerial decision-making, and strengthen the presence of MSME businesses through transparency, accountability, and readiness to access formal financing.

METHOD

This community service program employed a participatory empowerment approach using an action research framework (De Oliveira, 2023) to strengthen the implementation of Accounting Information Systems (AIS) among MSMEs in Magelang City. The approach emphasizes collaborative problem identification, gradual intervention, and continuous evaluation involving both facilitators and MSME partners to improve financial management capacity in a contextual manner.

The program involved 31 MSMEs selected purposively as community partners, considering a variety of business sectors: culinary, retail and grocery stores, and services and accessories. Subject selection was carried out to capture the diversity of operational characteristics and transaction complexity, thus enabling a cross-sectoral analysis of the problems and potential implementation of AIS in MSMEs. All subjects were active MSMEs that maintain financial records, whether manually, semi-manually, or based on digital applications. These MSMEs participated actively throughout the empowerment cycle, from initial diagnosis to evaluation stages.

Empowerment Stages

The empowerment process followed an action research cycle consisting of four stages:

1. **Diagnosis:** initial assessment of existing financial recording practices, internal control conditions, and AIS utilization through observation and document review to establish baseline conditions.
2. **Planning:** identification of key problems and collaborative design of contextual AIS solutions adjusted to MSME operational characteristics and accounting literacy levels.
3. **Implementation:** gradual mentoring involving digital bookkeeping introduction, internal control strengthening, and cloud-based financial data management practices.
4. **Evaluation:** monitoring changes in financial recording practices, system utilization, and managerial understanding through comparative observation between baseline and post-intervention conditions.

Data collection and monitoring were conducted throughout the empowerment process using structured observation and documentation review to assess baseline conditions and post-intervention changes. The data collected included transaction recording methods, inventory management, financial report preparation, internal control implementation, and the use of information technology in business accounting systems. To maintain data consistency, the data collection process used the same observation guidelines for all research subjects. The same observation instruments were used during baseline and endline assessments to ensure comparability of capacity changes among MSME partners.

Success Indicators and Evaluation Instruments

Program success was evaluated using qualitative capacity indicators, including: (1) ability to maintain structured transaction records, (2) improvement in inventory and cash flow monitoring practices, (3) preparation of simple financial reports, and (4) increased understanding of financial information for decision-making. Evaluation instruments consisted of structured observation sheets, documentation comparison, and mentoring progress notes used to assess changes before and after intervention.

Evaluation analysis was conducted thematically to identify patterns of change in AIS adoption and MSME financial management capacity throughout the empowerment stages. The analysis stages included data reduction, data presentation, and iterative conclusion drawing. Cross-sector analysis was used to identify similarities and differences in AIS implementation characteristics across business sectors and to develop a comprehensive synthesis of the findings.

To ensure the credibility of the empowerment outcomes, source and data triangulation was conducted by comparing observations and documentation obtained from each MSME. Furthermore, researchers implemented procedural consistency in data collection and analysis to minimize interpretation bias. The entire research process was conducted in accordance with ethical research principles, including maintaining the confidentiality of business subjects' identities and using data solely for academic purposes.

RESULTS

The results of the empowerment program were evaluated by comparing baseline conditions identified during the diagnosis stage with post-intervention outcomes observed after the mentoring implementation. The MSMEs involved come from the culinary, retail and grocery, and service and accessories sectors, with varying business scales and operational complexity. An initial analysis of the existing situation indicates that almost all MSMEs still use unstructured manual or semi-manual record-keeping, resulting in incomplete, non-real-time financial information that is difficult to use as a basis for business decision-making. The comparison focused on changes in MSMEs' financial recording practices, internal control implementation, and utilization of accounting information for managerial purposes. The overall capacity changes across MSME partners are summarized in Table 1.

Tabel 1. Comparison of MSME Capacity Before and After Mentoring

Capacity Indicator	Baseline Condition	Post-Intervention Condition	Change Category
Structured daily transaction recording	Mostly manual and inconsistent	More regular and digitally documented	Improved
Inventory monitoring	Based on physical estimation	Recorded and periodically monitored	Improved
Financial report preparation	Rarely prepared	Simple reports periodically produced	Improved
Internal control practices	Informal and undocumented	Basic procedures introduced	Improved
Financial data accessibility	Fragmented records	Integrated recording system	Improved
Use of financial information for decisions	Limited	Increasingly used for evaluation	Improved

Consistent with the baseline findings presented in Table 1, the culinary sector demonstrated specific capacity improvements following the mentoring intervention. Analysis results indicated that the main problems lay in inconsistent daily transaction recording, the lack of raw material inventory records, and weak segregation of duties between cashiers, production, and financial management. The direct impact of these conditions was partners' inability to determine net profit, inaccurate selling price determination, and an increased risk of cash and raw material loss. After mentoring and implementing simple digital record keeping tailored to their business capacity, partners began to have documented daily transaction recaps, monitorable stock data, and a more orderly recording process. These changes enabled business owners to obtain a clearer picture of business performance than before the community service activities were implemented.

In the retail and grocery store sector, results indicated that the dominant problems related to inventory management and transaction documentation. Most partners lacked accurate stock data and relied solely on physical observation, resulting in frequent inventory discrepancies. Furthermore, transaction documents were not digitized and stored systematically. Through the implementation of spreadsheet-based record keeping or an optimized POS application, partners began to maintain incoming and outgoing inventory records, digital transaction archives, and periodic sales summary reports. These results demonstrated an improvement in the regularity of recording and ease of stock monitoring compared to the initial situation.

In the services and accessories sector, analysis revealed a fragmented recording system, with income and expenses recorded on different, unintegrated platforms. Furthermore, access controls to financial data remained weak, increasing the risk of recording errors and misuse. After mentoring, partners began using a single, integrated primary recording system, established daily

transaction recording procedures, and restricted access to financial data based on their roles. These changes resulted in more consistent and traceable financial data compared to before the intervention.

Overall evaluation results indicate measurable improvements in MSME partners' financial management capacity compared to baseline conditions. Partners achieved a more orderly recording system, documented financial data, and an improved understanding of their business's financial flows. Initial impacts identified included improved partner ability to monitor cash flow, identify business costs, and conduct simple evaluations of business performance. The observed changes demonstrate a transition from fragmented administrative recording toward more structured AIS-supported financial management practices.

These results align with the objectives of the community service activity, namely to increase the capacity of MSMEs to implement Accounting Information Systems tailored to operational needs, improve the quality of financial information, and support more structured and sustainable business decision-making. These findings confirm the effectiveness of the contextual mentoring-based AIS empowerment model in facilitating gradual managerial transformation among MSMEs.

Table 2. Results of Community Service Activities for MSMEs

Business Sector	Initial Conditions	Interventions	Outputs	Early Impacts
Culinary	Manual and inconsistent records; unrecorded transactions; no inventory tracking	Gradual digital bookkeeping, task segregation, basic inventory records, cloud backup	Daily transaction logs, inventory data, simple financial reports	Improved cash flow monitoring and pricing decisions Better inventory control and reduced stock loss
Retail & Grocery	Stock discrepancies; sales not linked to inventory; poor document archiving	POS/spreadsheet optimization, digital archiving, stock reconciliation	Recorded stock movement, sales summaries	More reliable data for business evaluation
Services & Accessories	Fragmented systems; data entry errors; weak access control	System integration, SOP establishment, access restriction	Consistent and traceable financial records	Improved managerial capacity
All Sectors	No standardized system; non-real-time data; data loss risk	Cloud-based data management and mentoring	Digitized and structured bookkeeping	

(Processed data, 2026)

DISCUSSION

Based on an analysis of 31 MSMEs in Magelang City, spanning the culinary, retail and grocery, and service and accessories sectors, it was found that the implementation of Accounting Information Systems (AIS) is generally still in its infancy and not well-structured. Most MSMEs still rely on manual or semi-manual record-keeping to manage financial transactions and business operations.

In general, the record-keeping patterns used by MSMEs can be classified into three main categories: manual record-keeping based on notebooks, semi-manual record-keeping combining physical record-keeping with spreadsheets (Microsoft Excel or Google Sheets), and limited use of digital applications or Point of Sale (POS) systems. However, the use of these digital systems is not yet fully integrated and tends to be limited to specific functions, such as recording sales, without

being balanced with inventory management, operational costs, or the preparation of comprehensive financial reports (Alshamaila et al., 2013).

The results of the study indicate that the majority of MSMEs are unable to produce systematic financial reports, such as profit and loss statements, cash flow statements, or information on the company's financial position. This situation makes it difficult for business owners to accurately and real-time assess financial performance, resulting in strategic decision-making still being based on subjective estimates and experience. This problem is consistently found across all business sectors, albeit with varying degrees of complexity.

The gradual and uneven adoption of AIS observed among MSMEs can be explained through Rogers' Diffusion of Innovation theory, which suggests that technology adoption in small organizations depends heavily on perceived simplicity, trialability, and compatibility with existing practices (Banerjee et al., 2012; Permatasari et al., 2024). MSMEs tended to adopt AIS features incrementally rather than simultaneously integrating full accounting systems, reflecting an evolutionary adoption process consistent with diffusion theory.

In terms of internal control, most MSMEs have not implemented adequate separation of functions between recording, asset custody, and transaction authorization. The practice of multiple roles, particularly among cashiers, waiters, and stock managers, is still common. This situation increases the risk of recording errors, data loss, and potential fraud that is difficult for business owners to detect.

Furthermore, the management of accounting data and supporting transaction documents still faces various limitations, such as the risk of lost receipts, damage to physical archives, and the lack of data backup mechanisms. Although some MSMEs have begun using digital and cloud-based applications, their use has not been accompanied by adequate data security procedures and access rights management. These findings also align with the Technology Acceptance Model (TAM), which explains that technology adoption is strongly influenced by perceived usefulness and perceived ease of use (Davis, 1989; Manda & Salim, 2021). MSMEs demonstrated greater willingness to adopt AIS when systems were simplified and directly linked to immediate operational benefits such as cash monitoring and inventory tracking. Complex or non-contextual systems, by contrast, were less likely to be sustained (Purnamasari et al., 2020; Song, 2014).

Overall, this overview indicates that the Accounting Information System in MSMEs in Magelang City has not yet functioned as a managerial tool that supports internal control and strategic decision-making. However, this condition also indicates the potential for significant AIS development through the gradual implementation of digitalization, strengthening of internal controls, and integration of data management that is appropriate to the characteristics and scale of MSME businesses.

Key Cross-Sectoral Issues

The main problems with the implementation of Accounting Information Systems (AIS) in MSMEs in Magelang City show a relatively uniform pattern across all business sectors, despite varying operational characteristics and transaction scales. Research findings indicate that AIS weaknesses in MSMEs are not solely technical, but rather systemic and structural, encompassing aspects of recording, internal control, and accounting data management.

The most dominant problems identified are reliance on manual recording and recording that is not done in real time. In the culinary sector, the high intensity of daily transactions often causes business operators to neglect recording during busy operational times, resulting in many transactions being poorly documented. Similar conditions are also found in the retail and service sectors, where recording is done retrospectively based on memory or manual recaps at the end of

the period. This practice increases the risk of recording errors, distorts financial data, and reduces the reliability of the resulting accounting information.

A second cross-sectoral problem is weak internal control, particularly related to the separation of functions and transaction authorization mechanisms. The majority of MSMEs still practice dual roles, where one individual is responsible for cash receipts, transaction recording, and inventory management. Simple organizational structures and limited human resources result in practically non-existent internal control functions. As a result, the risk of fraud, data manipulation, and misuse of cash and inventory is difficult to detect early. From a capacity-building perspective (Eade, 1997), these limitations indicate that MSME constraints are not primarily technological but capability-based (Loo et al., 2023; Rupeika-Apoga & Petrovska, 2022). Capacity Building Theory emphasizes that sustainable organizational change occurs when knowledge, skills, and managerial awareness develop simultaneously through guided practice rather than one-time training. The mentoring intervention enabled gradual learning-by-doing, allowing MSME owners to internalize accounting procedures within their daily operations.

Furthermore, inventory management is a crucial issue that consistently arises, particularly in the culinary and retail sectors. Most MSMEs lack an adequate stock recording system, either in the form of inventory cards or an integrated digital system. Inventory is often monitored only visually without the support of accurate quantitative data. This situation directly impacts inaccurate calculations of Cost of Goods Sold (COGS), pricing that is not based on actual costs, and the potential for unidentified inventory loss (Wulandari et al., 2024).

Another problem relates to the low quality of financial reports produced by MSMEs. Research shows that most businesses do not prepare formal financial reports, such as profit and loss statements or cash flow statements, periodically (Gurendrawati et al., 2024; Zada et al., 2021). Available financial information is generally limited to records of cash inflows and outflows without clear account classifications. As a result, business owners lack an adequate information base to assess financial performance, operational efficiency, or long-term business sustainability.

From a data management perspective, MSMEs also face significant risks related to the security and sustainability of accounting information (Mediaty et al., 2025b). Reliance on physical documents such as cash books and manual receipts makes data vulnerable to loss, damage, or irretrievability. Although some MSMEs have begun using digital applications or spreadsheets, this technology utilization has not been accompanied by adequate data backup practices, system integration, or access rights management (Nuraini et al., 2024; Pawar & Palivela, 2025b; Triyana et al., 2025). This situation creates data fragmentation and hinders the provision of consistent and real-time financial information.

Overall, the identified cross-sectoral issues indicate that the main challenge to AIS implementation in MSMEs in Magelang City lies not in the lack of technology, but rather in the low level of systematization of recording, weak internal controls, and the lack of integration of accounting processes with managerial decision-making needs. These findings emphasize that improving the quality of AIS in MSMEs requires an approach that focuses not only on technology adoption but also on designing systems, procedures, and control structures that are appropriate to the characteristics of MSMEs.

Potential and Implications

The improvements observed during the mentoring process suggest that AIS adoption in MSMEs follows a socio-technical transformation rather than a purely technological transition. This supports prior studies emphasizing that digital accounting adoption among small enterprises requires alignment between technological tools, user capability, and organizational routines.

Empirical findings related to these cross-sectoral issues indicate that MSMEs in Magelang City have significant potential to improve the quality of their business management through the development of a more structured and contextual Accounting Information System (AIS). This potential relates not only to the adoption of digital technology but also encompasses business process improvements, strengthening internal controls, and enhancing decision-making capacity based on accounting information.

From a digitalization perspective, the research findings indicate that most MSMEs are at an early readiness stage to adopt a simple technology-based AIS. The use of spreadsheets, MSME cash applications, and relatively affordable Point of Sale (POS) systems provides MSMEs with the opportunity to transition from manual record-keeping to more accurate and real-time systems. This gradual digitalization has the potential to improve financial data quality, reduce recording errors, and accelerate the financial reporting process without burdening MSMEs with system complexity inappropriate for their business scale.

In addition to technological aspects (Pawar & Palivela, 2025a), strengthening internal controls has emerged as a strategic dimension in MSME AIS development. Implementing basic functional separation, establishing transaction authorization procedures, and systematic documentation has been proven to reduce the risk of errors and fraud, even within a simple organizational structure. Thus, an AIS functions not only as a recording tool but also as a control mechanism that supports business accountability and transparency. This expands the role of an AIS from a mere administrative system to a strategically valuable managerial instrument for MSMEs.

The potential for AIS development is also evident in the aspects of inventory management and pricing. Integrating sales records with inventory data allows MSMEs to obtain more accurate information on stock turnover and production costs. This information provides a more rational basis for calculating Cost of Goods Sold (COGS) and setting selling prices. Therefore, adequate AIS implementation has the potential to improve operational efficiency and maintain sustainable profit margins, particularly in the culinary and retail sectors, which experience high transaction volumes and fluctuating raw material prices.

From a decision-making perspective, improving the quality of an AIS allows MSME owners to monitor financial performance periodically and data-drivenly (Nuraini et al., 2024; Siswanto & Aqdam, 2024). More accurate and timely information on profit and loss, cash flow, and inventory positions can be used as a basis for business evaluation, expansion planning, and cost control. Thus, AIS contributes directly to improving the quality of managerial decisions and reducing reliance on intuition alone, which has historically dominated MSME management practices.

The practical implications of these findings suggest that AIS development in MSMEs should be undertaken through a phased and adaptive approach, taking into account human resource capacity, business complexity, and managerial information needs. This approach emphasizes that the success of AIS implementation in MSMEs is not determined by technological sophistication, but rather by the system's suitability to the operational context and user capabilities. Therefore, MSME mentoring programs and business development policies need to position AIS as an integral part of strengthening managerial capacity, rather than simply providing training in application usage.

Theoretically, the results of this study reinforce the view that Accounting Information Systems in MSMEs have different characteristics than those of large-scale business entities. Cross-sectoral findings indicate that the effectiveness of AIS in MSMEs is more influenced by the simplicity of the system design, clarity of procedures, and direct involvement of the business owner than by the complexity of the technology used. This finding further supports diffusion and technology acceptance perspectives, indicating that system simplicity and contextual relevance play a more decisive role than technological sophistication in small business environments. Thus, this study

makes an empirical contribution to the MSME AIS literature by emphasizing the importance of a contextual and needs-based approach in accounting information system development.

Synthesis & Theoretical Contribution

Integrating the empirical findings with technology adoption and empowerment theories provides a clearer explanation of why the mentoring-based intervention was effective. The action-oriented assistance reduced adoption barriers by increasing perceived usefulness (TAM), enabling gradual experimentation (Diffusion of Innovation), and strengthening managerial competencies through iterative learning (Capacity Building Theory).

Synthetically, the results of this study indicate that the problems with implementing Accounting Information Systems (AIS) in MSMEs in Magelang City are cross-sectoral and stem from low levels of record-keeping systematization, weak internal controls, and fragmented financial data management. These findings confirm that the primary challenge for MSMEs lies not in limited access to technology, but rather in the absence of accounting system design that aligns with the operational characteristics and managerial capacity of MSMEs. Therefore, the effectiveness of an AIS in the MSME context is determined more by the system's suitability to daily business practices than by the level of technological sophistication used.

From a theoretical perspective, this study enriches the literature on MSME Accounting Information Systems by proposing that AIS adoption in MSMEs is evolutionary and contextual. The cross-sectoral findings demonstrate that AIS in MSMEs cannot be understood solely as a technology adoption process, but as an integration of financial recording, internal control, and managerial decision-making processes. Thus, this study challenges the universalistic approach in AIS literature, which tends to emphasize system uniformity, and instead emphasizes the importance of an approach based on business scale, transaction intensity, and owner involvement in AIS design and implementation.

Practically, the results of this study have direct implications for MSMEs, business facilitators, and policymakers. For MSMEs, implementing a simple yet structured AIS, through gradual digitization, separation of basic functions, and data backup has the potential to improve financial information accuracy, operational transparency, and decision-making quality. For MSME facilitators and development institutions, these findings emphasize that effective interventions involve more than just providing applications or technical training, but also assistance in designing accounting procedures and internal controls appropriate to the business context. Meanwhile, for policymakers, this study demonstrates that strengthening MSME AIS can be a strategic instrument for enhancing the long-term sustainability and competitiveness of MSMEs.

Thus, this study confirms that Accounting Information Systems play a strategic role in the managerial transformation of MSMEs, from intuition-based business practices to information-based management. The synthesis of these findings shows that the development of contextual and adaptive AIS is not only relevant for improving the financial performance of MSMEs, but also contributes to strengthening business governance in the informal and semi-formal sectors, which have long been the backbone of the regional economy. Therefore, this study extends existing AIS and MSME empowerment literature by demonstrating that successful AIS adoption emerges from the interaction between technological adaptation and participatory capacity development rather than technology deployment.

CONCLUSION

The findings demonstrate that prior to the intervention, AIS implementation among MSMEs in Magelang City was characterized by fragmented recording practices, weak internal controls, and

limited utilization of accounting information for managerial decision-making. These conditions result in inaccurate, non-real-time financial information, and a lack of reliability as a basis for strategic decision-making. Thus, AIS in MSMEs remains positioned as an administrative tool, rather than a strategic business management instrument.

This study produces a contextual AIS mentoring model consisting of four interconnected stages: diagnosis of existing financial practices, adaptive system design aligned with MSME operational characteristics, gradual implementation through participatory mentoring, and continuous evaluation of capacity development. The model emphasizes the integration of technological adaptation with behavioral and managerial assistance to ensure sustainable system adoption.

The implementation of this empowerment model resulted in observable improvements in MSME partners' financial management capacity, including more structured transaction recording, improved inventory and cash flow monitoring, strengthened internal control practices, and increased utilization of financial information for business evaluation and decision-making.

This study also concludes that there is significant potential for AIS development in MSMEs in Magelang City through the gradual implementation of digitalization, strengthening of internal controls, and the integration of cloud-based data management tailored to the scale and characteristics of the business. Contextual and adaptive implementation of an AIS has the potential to improve financial reporting accuracy, operational efficiency, business transparency, and the quality of managerial decision-making.

Overall, this study contributes to community service and MSME AIS literature by demonstrating that successful AIS adoption is a managerial transformation process driven by participatory capacity building rather than technological sophistication. The proposed model provides an applied framework for designing empowerment programs that integrate accounting literacy improvement, system adaptation, and behavioral assistance, thereby extending existing approaches to MSME digital financial transformation.

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INFORMED CONSENT (Required: Please choose from the two statements)

The authors confirm that informed consent was obtained from all participants involved in this study. Participants were informed about the objectives of the study, the nature of their involvement, and the use of the data collected. Participation was voluntary, and confidentiality of all participant information was ensured throughout the research process.

CONFLICT OF INTEREST (Required: Please confirm or revise statement)

The authors declare that there is no conflict of interest regarding the publication of this manuscript.

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