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Mentoring and Digitalization of Accounting Information Systems in Production and Sales Cycles for Agro-Industrial Partners at PT Madubaru PG-PS Madukismo

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Abstract

Purpose: This community service aims to enhance the human resource capacity of PT Madubaru through the digitalization of Accounting Information Systems (AIS) in production and sales cycles.

Method: Utilizing Participatory Action Research (PAR), the program encompassed preparation, training, on-the-job mentoring, and evaluation.

Practical Applications: The initiative produced an AIS implementation module and new Digital SOPs, significantly improving employee competency and operational efficiency.

Conclusion: The mentoring successfully transformed manual recording behaviors into computerized systems, reducing errors and accelerating administrative processes, thereby supporting the sustainable operational ecosystem of the agro-industry.

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Introduction

The rapid advancement of information technology and the increasingly competitive industrial landscape demand that agro-industrial companies manage operational data quickly, accurately, and in an integrated manner. In the modern business environment, Accounting Information Systems (AIS) serve as a crucial instrument for collecting, processing, storing, and generating financial information to support managerial decision-making (Laudon & Laudon, 2020; Romney & Steinbart, 2020). The quality of information output from the AIS heavily determines the effectiveness of management decisions and the strength of internal controls (Gelinas et al., 2018; Hall, 2016). For manufacturing and agro-industrial companies, the urgency of implementing a reliable AIS is multiplied due to the high complexity of operations, which involves stages from raw material procurement, processing, quality control, to distribution and sales (Mulyadi, 2016). The entire chain of these activities generates massive transaction data flows that must be recorded systematically to guarantee the reliability of the company's financial reports (Bodnar & Hopwood, 2019).

Empirical phenomena in Indonesia indicate that the utilization of information technology in AIS contributes significantly to the efficiency of raw material inventory control, optimization of sales cycles, and acceleration of financial reporting (Pratama & Kurniawati, 2021; Sari & Hajar, 2020). However, the implementation of technology is often hindered by low digital literacy and a strong reliance on manual processes at the operator level (Purnama & Wijaya, 2022). This gap between technological availability and human resource capacity creates operational bottlenecks, weakens internal controls, and delays timely reporting, which can have cascading negative effects on the broader supply chain ecosystem.

The partner of this community service is PT Madubaru PG-PS Madukismo, the only active sugar and alcohol agro-industry in the Special Region of Yogyakarta, which has been operating since 1955. The company involves hundreds of employees and thousands of partner sugarcane farmers. Based on the initial situational analysis conducted by the service team, there are significant problems at the partner site: approximately 35% of the production cycle recording is still done manually, causing data reconciliation delays of up to 2-3 days. Furthermore, sales data synchronization with distribution partners is not real-time. These constraints are not merely technical issues but stem from a lack of digital capacity among employees and the absence of standardized Digital Standard Operating Procedures (SOPs). This condition potentially hinders financial report accuracy and impacts the delay in payments to partner sugarcane farmers, thereby affecting their economic welfare.

Departing from the gap between the ideal digital ecosystem needs and the operational reality, the service team initiated an intervention through a mentoring and training program. The objective of this community service is to empower the partner's human resources (employees from the production, warehouse, administration, and sales divisions) through AIS digitalization training and the development of integrated SOPs. The expected social and economic changes are the creation of partner digital independence, a behavioral shift in recording from manual to computerized systems, and the acceleration of information flow, which ultimately supports the sustainability of the local agro-industrial ecosystem.

Method

This community service utilizes the Participatory Action Research (PAR) method, which involves the active participation of the partner in identifying and solving their problems. PAR was chosen because it aligns with the empowerment paradigm of community service, where the service team does not merely observe but actively intervenes and collaborates with the partner to bring about sustainable change (McNiff, 2016; Stringer, 2021). The subjects of this community service are 25 employees consisting of production, administration, warehouse, and sales divisions at PT Madubaru PG-PS Madukismo, located in Bantul Regency, Special Region of Yogyakarta.

The service activities were carried out through four systematic stages:

1. Preparation Stage: The team conducted an initial survey to map the digital competency gaps of the partner's employees. This stage also included the signing of a Memorandum of Understanding (MoU) and the development of the "Integrated AIS Implementation Module" and draft Digital SOPs tailored to the company's specific operational flow.
2. Implementation Stage: A 2-day "AIS Digitalization Workshop" was conducted to transfer theoretical knowledge and software skills. This was followed by a 4-week on-the-job mentoring phase directly in the partner's workspace to assist employees in implementing the new Digital SOPs and overcoming real-time technical hurdles.
3. Evaluation Stage: The effectiveness of the intervention was measured using pre-tests and post-tests to assess the increase in employees' understanding of AIS. Additionally, the team conducted observational measurements on the reduction of manual recording error rates and the acceleration of reporting time.
4. Sustainability Stage: To ensure the program's longevity after the service team's departure, the team facilitated the selection and training of three internal "Digital Champions" from the most adaptive employees. These champions are tasked with becoming peer mentors for their colleagues.

Data collection for the evaluation involved quantitative data (test scores, time-efficiency metrics) and qualitative data (observational notes on behavioral changes, interview transcripts with management and employees). Data triangulation was applied to ensure the validity of the impact assessment.

Result

The community service program was implemented intensively and received a highly positive response from the management and employees of PT Madubaru. The dynamics of the mentoring process revealed significant shifts in the mindset and operational behavior of the partner. The AIS Digitalization Workshop was attended by 25 participants from various divisions. During this phase, the service team officially handed over the Integrated AIS Implementation Guide Module and the Digital SOP Documents for Production and Sales Cycles, which were subsequently adopted and ratified by the company's management through an internal decree.

Table 1. Results of Pre-Test and Post-Test Evaluation on AIS Understanding

No	Assessment Aspect	Average Pre-Test Score	Average Post-Test Score	Improvement
1	Understanding of AIS Data Flow	54.5	82.0	+ 27.5
2	Input & Reconciliation Skills	48.0	85.5	+ 37.5
3	Understanding of New Digital SOPs	45.0	88.0	+ 43.0
	Overall Average	49.1	85.1	+ 36.0

Source: Author's Work, 2026.

The data in Table 1 demonstrates a substantial increase in competency. The most significant improvement occurred in the understanding of the new Digital SOPs (+43.0), indicating that the contextualized mentoring effectively bridged the gap between theoretical system design and practical daily application.

During the initial weeks of on-the-job mentoring, the team encountered resistance and adaptation challenges, particularly from senior employees who were deeply accustomed to manual ledger recording. They expressed concerns that the digital system would complicate their workflow and fear of making irreversible errors. To address this, the service team

employed a persuasive approach and personalized one-on-one mentoring, emphasizing that the system was designed to reduce their administrative burden, not to monitor them unfairly.

By the third week, a breakthrough occurred as employees began to experience the direct benefits of the system, such as automatic stock updates and instant report generation. Monitoring results at the end of the 4th week showed a 60% reduction in manual input errors and a dramatic acceleration in the preparation time for daily sales reports, from 2 days to just 3 hours. Furthermore, the establishment of 3 internal "Digital Champions" has ensured that peer-support is continuously available, fostering a culture of continuous digital learning within the company.

Figure 1. AIS Digitalization Workshop and On-The-Job Mentoring Activities at PT Madubaru



Source: Private Documentation, 2026.

Figure 2. Implementation of Digital SOPs in the Production Cycle Recording



Source: Private Documentation, 2026.

Discussion

This community service program successfully addressed the partner's operational bottlenecks caused by the reliance on manual processes. An in-depth analysis reveals that the intervention combining structured training with intensive on-the-job mentoring is far more effective than one-way socialization or mere software installation (Abdurrahman et al., 2021; Wijayanti & Nugroho, 2023). The significant increase in post-test scores and the formal adoption of the new Digital SOPs prove that a genuine transformation of human resource capacity has occurred at the partner's internal level. This finding aligns with Purnama and Wijaya (2022), who argued that technology adoption in the manufacturing sector is fundamentally a human adaptation issue rather than a purely technical one.

The impact of this community service extends beyond the company's internal walls, bringing broad socio-economic implications. With the accelerated reconciliation of sales and production data, management now possesses real-time visibility to make strategic decisions. More importantly, this internal efficiency directly impacts the company's cash flow

smoothness, which indirectly guarantees the timeliness of sugarcane absorption and the payment of rights to partner sugarcane farmers around Bantul. This supports the findings of Sari and Hajar (2020) and Rahmadani and Arfan (2018) that strengthening the AIS in the agro-industrial sector correlates directly with the empowerment and economic stability of the local supply chain.

The novelty of this community service lies in the "Digital Champion" mentoring model, which guarantees the sustainability of the program. Unlike traditional service programs that end when the funding period closes, this model builds internal resilience and peer-led knowledge transfer. However, constraints were still identified regarding data integration with third parties (external distribution partners) whose systems are not yet API-connected. This highlights a limitation in the current scope of the intervention, as the digital ecosystem of an agro-industry is inherently open and reliant on external actors.

Overcoming the initial resistance from senior employees also provides a valuable lesson in change management within community service. The success of the intervention was heavily dependent on the service team's empathy and willingness to understand the psychological comfort zones of the partners. This underscores the importance of a humanistic approach in technological empowerment programs (Stringer, 2021). Future similar community service initiatives in the manufacturing sector must prioritize psychological preparedness and personalized mentoring alongside technical skill transfers.

Conclusion

Community service through the digitalization mentoring of the Accounting Information System at PT Madubaru PG-PS Madukismo has successfully enhanced human resource capacity, shifted recording behaviors from manual to computerized systems, and produced tangible outputs in the form of an AIS Module and Digital SOPs adopted by the partner. The theoretical reflection from this activity confirms that the effectiveness of information systems in the agro-industrial sector does not solely depend on technological sophistication, but rather on sustainable mentoring and the psychological adaptation of the human resources involved. The practical implications of this program demonstrate that targeted capacity building can yield immediate operational efficiencies and broader socio-economic benefits for the supply chain. Recommendations for future community service actions include expanding the digital literacy program to the partner sugarcane farmers. By integrating the farmers into the digital ecosystem, an end-to-end supply chain information system can be realized, further securing the sustainability and transparency of the national agro-industry.

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