

DIGITAL TRANSFORMATION OF WEB-BASED ACCOUNTING INFORMATION SYSTEMS FOR THE REVENUE CYCLE IN MULTIPURPOSE COOPERATIVES

Merry Hanif Rahma¹, Anik Kusmintarti^{2*}, Kurnia Ekasari³

¹Master of Applied Accounting Information System, Politeknik Negeri Malang,
Indonesia

^{2,3}Accounting Department, Politeknik Negeri Malang, Indonesia

*Corresponding Author:

anik.kusmintarti@polinema.ac.id

Abstract

Cooperatives in Indonesia play a strategic role in supporting local economic development and community welfare. However, many cooperatives still rely on manual and fragmented financial management processes that hinder efficiency, accuracy, and transparency in reporting. To overcome these challenges, this study aims to design a web-based Accounting Information System (AIS) for the revenue cycle of KPRI Pergu Singosari as a digital solution to overcome these challenges. To overcome these challenges the research adopts a Research and Development (R&D) approach with the Rapid Application Development (RAD) method, which includes needs analysis, system design, prototype development, and conceptual evaluation. Through business process modelling using Data Flow Diagrams (DFD), this study identifies key performance gaps in the cooperative's manual accounting system particularly data fragmentation, duplicate recording, and delays in financial reporting. The proposed web-based AIS integrates revenue data across multiple business units (savings and loans, retail, transportation, and land plots) into a single centralized database. The output of this research is a conceptual and functional prototype that demonstrates the system's technical and functional feasibility in supporting real-time reporting and consolidated cooperative Surplus (SHU) preparation. The conceptual evaluation indicates the prototype's potential to enhance operational efficiency, data accuracy, and transparency in financial management.

Keywords: Digital Transformation, Accounting Information System, Cooperative, Revenue Cycle, Website.

1. Introduction

Cooperatives in Indonesia, as one of the main pillars of the economy, are based on the principles of kinship and economic democracy. They play an important role in supporting MSMEs, expanding market access, and improving community welfare (Arifin et al., 2024). However, data shows that the number of cooperatives has declined significantly from 209,488 units in 2014 to 131,441 units in 2024. This was, mainly due to quality reforms and the dissolution of unhealthy cooperatives (Kemenkopukm, 2024). One of the main factors weakening cooperative competitiveness is the financial management system, which is still manual, fragmented, and not integrated across business units (Hanif et al., 2021; Muslim et al., 2024).

The case study at KPRI Pergu Singosari shows that financial recording systems remain fragmented across units such as savings and loans, retail stores, transportation, and land plots, making data integration difficult and slow down reporting processes. Such fragmentation is also identified in the literature as a major barrier to financial

consolidation (Budiningrum & Subiyantoro, 2023). This situation triggers risks of data duplication, inconsistency, and reporting delay problems. These issues are also found in cooperatives that still use basic, non-integrated applications (Wijaya & Munandar, 2022). This reduces transparency and accountability for members. In the era of Society 5.0, cooperatives are required to embrace digital transformation to improve efficiency, accuracy, and transparency, particularly in the revenue cycle, which encompasses sales and cash receipts (Polo-Garrido et al., 2022).

Furthermore, empirical studies in Indonesia confirm that the adoption of web-based accounting information systems in cooperatives strengthen efficiency and transparency. For example, Abdillah et al., (2022) developed a web-based savings and loan cooperative application that replaced manual processes and reduced errors while accelerating reporting. Similarly, Ikhwan et al (2024) designed a centralized cooperative information system to improve service effectiveness and integrate transaction data, demonstrating how digital platforms enhance accountability. These findings emphasize that AIS implementation in Indonesian cooperatives is not only feasible but also essential to support competitiveness and member trust in the digital era. In the current era of digital transformation, accounting science is developing rapidly and is required to continue to adapt (Kusmiati & Ningsih, 2025).

This research focuses specifically on the revenue cycle, which plays an important role of being the primary source of cooperative cash flow and the basis for distributing cooperative surplus (SHU). Prior studies on AIS evaluation of the revenue cycle in large entities indicate that systems must simultaneously handle cash and credit sales as well as cash receipts to ensure effective internal control (Gracia, Nangoi, & Tirayoh, 2016). Activities within the revenue cycle from sales recording to cash collection and reporting involve coordination across business units, making them prone to errors, delays, and data inconsistency when handled manually (Sri Anjarwati et al., 2023). Studies on cooperative AIS further emphasize that AIS adoption, defined as the organizational decision to implement and routinely utilize the system in financial operations, can improve the effectiveness, transparency, and reliability of financial reporting (Fauziah & Laraswati, 2015; Firdaus et al., 2023; Isa & Hartawan, 2017; Salman et al., 2023). Given the complexity and potential impact of errors in the revenue cycle, digitalization is a strategic step to enhance financial performance, transparency, and member trust.

Despite the growing number of studies on Accounting Information Systems (AIS) in cooperatives, most existing researches focus on single-unit operations, such as savings and loans or retail activities, without addressing the integration of multiple business units within a single cooperative. This limitation indicates a lack of comprehensive digital models capable of managing the entire revenue cycle in multipurpose cooperatives. This is true, even when prior studies suggest that web-based systems, when applied as the primary platform for accounting information systems, can enhance internal control, data consistency, and managerial oversight across business operations (Kusmintarti et al., 2022). Addressing this gap, the present study contributes by designing a web-based Accounting Information System (AIS) prototype with Enterprise Resource Planning (ERP) characteristics that integrate revenue data from multiple cooperative units including savings and loans, retail, transportation, and land plot transactions into a centralized, real-time reporting framework (Raharja et al., 2024). This proposed model not only mitigates data fragmentation across business units but also provides a conceptual foundation for supporting digital transformation in cooperative financial management.

2. Theoretical Background

2.1 The Role of Accounting Information Systems in Digital Transformation

Society 5.0 emphasizes digital integration to improve organizational competitiveness and quality of life (Moon & Lee, 2020). Digital transformation through web-based systems has been shown to enhance financial management, transparency, and accountability (Utami et al., 2023), while cloud accounting adoption among SMEs provides flexibility, data security, and cost efficiency (Popivniak, 2019). Web-based accounting information systems also play a crucial role in strengthening cooperative revenue cycles through systematic transaction recording and improved internal control (Hai et al., 2024). Integration with cloud computing further supports data accuracy and interoperability, which are directly associated with improved financial management performance (Nguyen Phu et al., 2025). In this context, Accounting Information Systems (AIS) function as a key technological enabler of digital transformation by integrating financial processes, improving data accuracy, and supporting real-time decision-making.

AIS is a system that collects, records, stores, and processes financial data to generate useful information for managerial decision-making (Romney & Steinbart, 2018). A well-designed AIS enhances efficiency, effectiveness, and transparency of financial management and improves accountability in cooperative financial reporting (Muslim et al., 2024; Puspitawati, 2021). Prior studies also indicate that AIS quality—reflected in system quality, information quality, and service quality—along with user competence, significantly influences system usage, decision-making success, and organizational performance (Saad, 2023; Thuy, 2025; Zohry & Al-Dhubaibi, 2024). These findings suggest that ensuring AIS quality and addressing adoption barriers are essential for cooperatives seeking to achieve sustainable performance improvements through digital transformation.

2.2 Revenue Cycle

The revenue cycle encompasses activities from customer orders, delivery of goods/services, sales recording, to cash collection (Marifati & Ubaidillah, 2019). For cooperatives, this cycle is vital as it underpins cash flow and determines the capacity to meet obligations to members, including SHU distribution (Riwajanti et al., 2022). Prior research indicates that AIS tailored to the revenue cycle enhances financial reporting reliability and strengthens internal controls (Salim et al., 2021). Recent studies reinforce this view, demonstrating that the application of AIS in the revenue and cash receipts cycle improves reporting accuracy, reduces duplication, and increases internal control effectiveness (Nurcahyani & Fambudi, 2024). In the MSME context, integrate AIS with e-commerce platforms has been found to significantly strengthen revenue cycle efficiency, proving that digitalization of sales and cash receipts can enhance performance and accountability (Ami, Syafitri, & Meiriasari, 2023).

2.3 Data Flow Diagram (DFD)

A Data Flow Diagram (DFD) is a structured modeling tool that illustrates how data moves through an information system. This is done through a clear visual representation inputs, processes, data stores, and outputs in a clear visual representation (Cheema et al., 2023). The technique uses layered abstraction, beginning with Level 0 or the context diagram, which provides a high-level overview of the system's interaction with external entities, followed by Level 1, which breaks up the single process into sub-processes to

show internal flows and data stores (Lumat, 2025). In the era of digital transformation, DFD remains relevant as it helps organizations translate business processes into system requirements, ensuring that workflows and financial cycles are accurately represented before technical implementation (Mikhlif & Smaoui, 2025).

3. Methods

3.1 Research Design

This study adopts a Research and Development (R&D) approach combined with the Rapid Application Development (RAD) model. The R&D approach is appropriate for studies that aim to produce a system prototype which can be evaluated conceptually and refined according to user requirements (Sugiyono, 2018). Meanwhile, the RAD method emphasizes rapid prototyping, active user feedback, and iterative refinement, making it highly suitable for information system development where adaptability and speed are essential (Murdiani & Hermawan, 2022). The combination of R&D and RAD enables the systematic development of an Accounting Information System (AIS) prototype that is tailored to the specific needs of the cooperative while maintaining flexibility throughout the development process. The research design is developmental in nature, focusing on the creation, evaluation, and refinement of a web-based AIS prototype to address the financial recording and reporting challenges faced by the cooperative.

3.2 Scope and Object of Research

3.2.1 Research Object

The object of this research is a multi-business cooperative, KPRI Pergu Singosari, located in Malang Regency, which operates four business units: savings and loans, travel services, retail store, and land parcel sales. Currently, each unit maintains independent financial records using manual or semi-computerized methods that are not yet integrated. This lack of integration creates challenges in financial reporting, particularly in calculating the Annual Member Service Contribution (SHU), which requires consolidated data from all business units. The cooperative was selected as the research object due to its complex transaction processes and the urgent need for an integrated information system to support efficient financial management and accurate reporting.

3.2.2 Research Subject

The research subject is KPRI Pergu Singosari, a multipurpose cooperative with multiple business units, including savings and loans, retail, transportation, and land plots, selected for its complex transaction processes related to SHU reporting (Muslim et al., 2024). The cooperative serves as both the context and the target of the system development, with its administrators and staff participating in the needs analysis, system design, and conceptual evaluation stages. The involvement of cooperative personnel ensures that the developed system aligns with actual operational requirements and user expectations.

3.3 System Development Stages

To operationalize the R&D approach within the RAD framework, the system development process was structured into iterative stages emphasizing user involvement and rapid refinement to ensure alignment with the cooperative's operational needs. The stages include needs analysis, system design, and system development.

The first stage, needs analysis, was conducted through observation and preliminary interviews with KPRI Pergu Singosari administrators to identify issues in the existing manual financial management system and determine user requirements for integration and reporting. During this stage, researchers identified the specific challenges faced by each business unit in recording transactions, generating reports, and consolidating financial data for SHU calculation. The needs analysis also captured user expectations regarding the functionality, usability, and features of the proposed system, including the need for real-time data integration, automated report generation, and user-friendly interfaces.

The second stage, system design, involved modeling the cooperative's business processes using Business Process Modeling and Notation (BPMN) to visualize workflows and identify inefficiencies. BPMN provides a standardized graphical representation of business processes, enabling stakeholders to understand and analyze existing workflows and propose improvements. The logical structure of data movement was then depicted using Data Flow Diagrams (DFD) to ensure clarity of input, process, and output relationships (Owen & Raj, 2012). The DFD illustrates how data flows through the system, identifying data sources, processing activities, data storage, and data destinations. This modeling approach ensures that the system design accurately reflects the cooperative's operational requirements and facilitates the identification of integration points between business units.

The third stage, system development, was carried out based on the analysis and modeling results, resulting in a web-based Accounting Information System (AIS) prototype focusing on the revenue cycle, covering the integration of savings and loans, retail, transportation, and land plot units. The system was developed using appropriate web technologies to ensure accessibility, scalability, and ease of maintenance. The prototype includes modules for transaction recording, data validation, report generation, and user management, all designed to support the cooperative's financial management processes. The development process followed the RAD principles of rapid prototyping, with continuous refinement based on user feedback and testing.

3.4 Data Collection Techniques

Data collection in this study utilized multiple techniques to gather both qualitative and quantitative information for system development and evaluation. The techniques employed include observation, interviews, and questionnaire using the System Usability Scale (SUS).

Observation was conducted at KPRI Pergu Singosari to gain a direct understanding of the existing financial management practices across all business units. Researchers observed how administrators and staff recorded transactions, maintained records, and generated reports using manual or semi-computerized methods. This direct observation provided valuable insights into the strengths and weaknesses of the current system and identified specific areas requiring improvement. Preliminary interviews were also conducted with KPRI Pergu Singosari administrators and key personnel to gather detailed information about the cooperative's operations, financial recording practices, reporting requirements, and challenges faced in managing multiple business units. The interviews also explored user expectations and requirements for the proposed system, including desired features, functionality, and usability considerations.

Additionally, conceptual evaluation was conducted at the conceptual design stage to assess functional feasibility and alignment with user requirements. The System Usability

Scale (SUS), a standardized usability measurement instrument consisting of ten Likert-scale statements that evaluate users' perceived ease of use, system complexity, and overall satisfaction, was applied as an initial usability perception assessment based on prototype interaction. SUS was selected because it provides a quick yet reliable measure of perceived usability and is widely used in information system evaluation studies to obtain a quantitative usability score (Brooke, 1996). The SUS instrument consists of both positively and negatively worded statements to reduce response bias and improve measurement reliability. For negatively phrased items, the scoring was reversed during analysis so that higher adjusted scores consistently represent better perceived usability.

Table 1. System Usability Scale (SUS) Questionnaire Items

No	Question
1	I think that I would like to use this system frequently
2	I found the system unnecessarily complex
3	I thought the system was easy to use
4	I think that I would need the support of a technical person to be able to use this system
5	I found the various functions in this system well integrated
6	I thought there was too much inconsistency in this system
7	I would imagine that most people would learn to use this system very quickly
8	I found the system very cumbersome to use
9	I felt very confident using the system
10	I had to learn a lot of things before I could continue with this system

Source: Brooke (1996)

System usability was evaluated using the System Usability Scale (SUS) administered on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). In this study, a score of 1 indicates that the respondent strongly disagrees with the statement, while a score of 5 indicates strong agreement, reflecting a more positive usability perception. For negatively phrased items (items 2, 4, 6, 8, and 10), scoring was reversed during analysis to ensure consistency in interpretation, where higher scores consistently represent better perceived usability. The evaluation participants were limited to fewer than ten internal cooperative users, as the developed system is specifically intended for internal operational use. Therefore, the usability findings should be interpreted as preliminary internal validation rather than broad generalization.

3.5 Data Analysis Techniques

Data analysis in this study employed both qualitative and quantitative methods to evaluate the developed system. Qualitative analysis was conducted through the interpretation of findings from observations and interviews with cooperative administrators. The observation and interview data were analyzed using thematic analysis to identify patterns, themes, and key issues related to the existing financial management system. This analysis provided the foundation for understanding user requirements and designing the proposed system. The findings from the qualitative analysis informed the system design and development stages, ensuring that the prototype addressed the identified needs and challenges.

Quantitative analysis was performed using the System Usability Scale (SUS) to evaluate the usability of the developed prototype. The SUS scoring procedure followed the established guidelines: for odd-numbered items (1, 3, 5, 7, 9), the score contribution was calculated as the item score minus 1 (score - 1). For even-numbered items (2, 4, 6, 8,

10), the score contribution was calculated as 5 minus the item score (5 - score). The total SUS score was then calculated by summing all item contributions and multiplying by 2.5, resulting in a score ranging from 0 to 100. A higher SUS score indicates better perceived usability. The SUS score interpretation is based on established benchmarks, where scores above 68 are considered above average, scores between 50–68 are considered average, and scores below 50 indicate poor usability (Bangor et al., 2008). This benchmarking approach provides a standardized and interpretable measure of system usability that can be compared across different systems and studies. Despite the limited number of respondents, the benchmark-based evaluation provides practical insights into user perceptions and, when combined with objective process-based quantitative results, strengthens the overall evaluation of the proposed AIS without relying on statistical inference.

Conceptual evaluation was also conducted to assess the functional feasibility and alignment of the developed system with user requirements. This evaluation focused on whether the system meets the operational needs of the cooperative, particularly in terms of transaction recording, data integration, report generation, and SHU calculation. The evaluation was based on user feedback gathered through observations, interviews, and the SUS questionnaire, providing a comprehensive assessment of the system's effectiveness and usability.

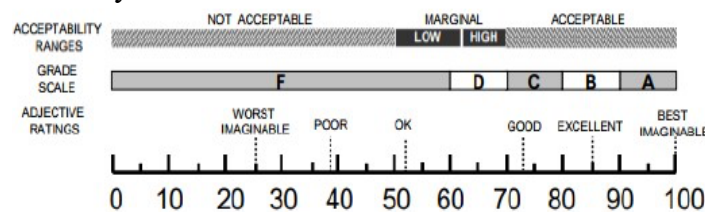


Figure 1. SUS Score Range Interpretation
 Source: Bangor et al. (2008)

4. Results and Discussion

4.1 Analysis of Current System

The analysis shows that the accounting system at KPRI Pergu Singosari is still conducted manually and remains fragmented across business units, including savings and loans, retail store, land plots, and travel services. Each unit is managed by its own cashier, with transaction records kept in ledgers or simple applications such as Excel. The transaction data are then compiled and physically submitted to the treasurer, who reprocesses them into financial reports.

This layered recording model creates several problems. First, cash and revenue management still rely heavily on manual records, making them vulnerable to delays, errors, and data loss. Second, the separation between units prevents real-time access to information and complicates the consolidation of financial statements. Third, the reporting process results in duplicate entries, as the treasurer must re-enter data into Excel before producing official reports. This not only lengthens the workflow but also reduces the efficiency and accuracy of the financial information generated. Overall, the current system has not been able to meet the management needs of cooperatives that demand speed, transparency, and integration across business units. This underscores the urgency of digital transformation through the implementation of a web-based Accounting Information System, which can provide real-time access, reduce the risk of duplicate recording, and improve the accuracy and accountability of revenue reporting.

4.2 Gap Performances

Based on the results of interviews and observations, performance gaps were identified in the management of revenue. These gaps are evident in several activities that are not yet carried out efficiently and effectively, creating obstacles to achieving organizational objectives. This condition highlights the need for an integrated system to ensure smoother processes, improve the accuracy of financial recording, and strengthen the overall performance of KPRI Pergu Singosari. **Table 2** outlines the performance gaps that represent key issues within the cooperative's revenue cycle.

Table 2. Gap Performances

No	Activity	Issues	Description
1	Cash inflows and outflows in each business unit of KPRI Pergu	• Managed manually • Managed separately • Limited monitoring	• The process of recording, storing, and reporting cash receipts still relies on manual methods using physical ledgers, which not only slows the flow of financial data but also increases the risk of errors and data loss. • Each business unit records transactions manually and submits reports physically to the treasurer, making information inaccessible in real time and hindering timely and accurate decision-making. • Reports are prepared at different locations and times by each unit, which severely limits monitoring. The treasurer must physically visit units to ensure data accuracy, which consumes significant time and resources and is inefficient for operational needs.
2	Revenue reporting by the Treasurer of KPRI	• Duplicate recording • Lack of efficiency and effectiveness	• Every revenue and expenditure transaction received by the treasurer must be re-entered manually into Excel and further processed to prepare financial statements. • This duplicate recording process is time-consuming and prevents data from being real-time, complicating reporting that is carried out separately and without integration. • Such inefficiency creates serious challenges in financial management, increases the risk of errors, and hinders fast and accurate data-driven decision-making.

Source: Processed data (2026)

In the aspect of revenue reporting, the duplicate recording carried out by the treasurer increases the workload and extends the reporting cycle. This process not only causes delays in the presentation of reports but also reduces transparency, as the data provided

are not real-time. Overall, these performance gaps demonstrate that the existing system has not been able to support the demands of modern cooperatives, which emphasize efficiency, accuracy, and accountability. Therefore, digital transformation through a web-based system is an urgent necessity to improve the quality of financial management, accelerate the flow of information, and strengthen transparency within the cooperative's revenue cycle.

4.3 Data Flow Diagram Proposed System

4.3.1 Diagram Konteks (Level 0)

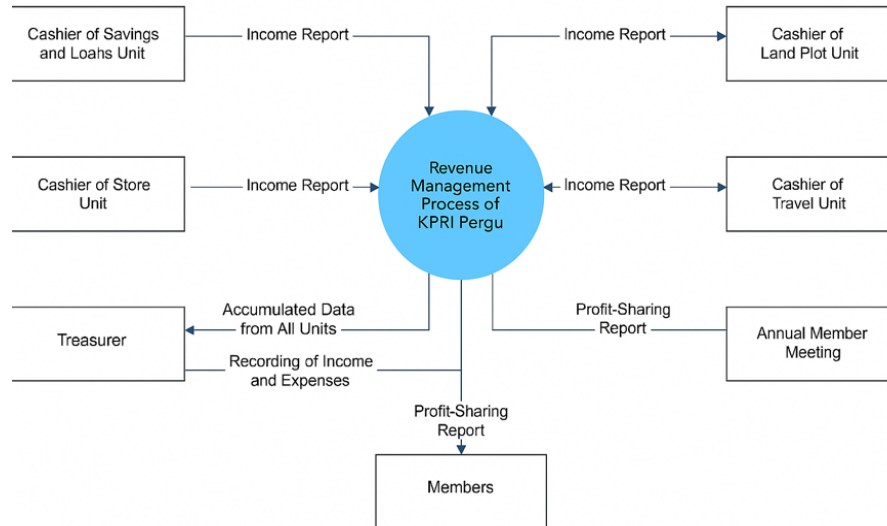


Figure 2. Context Diagram

Source: Processed data (2026)

Figure 2 illustrates the overall data flow of the Revenue Management Process of KPRI Pergu, showing the interaction between the main system and external entities involved in financial activities. This system serves as the central process responsible for collecting, recording, and managing revenue data from multiple business units within the cooperative.

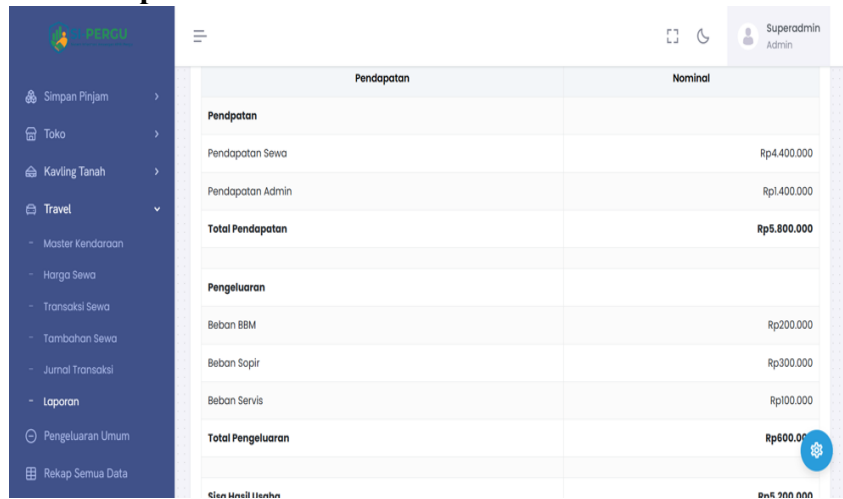
Each cashier unit including the Cashier of Savings and Loans Unit, Cashier of Store Unit, Cashier of Land Plot Unit, and Cashier of Travel Unit submits an Income Report to the central revenue management system. These reports contain transaction data and receipts generated from each respective unit's operational activities. The system then consolidates these inputs into a unified revenue database, facilitating efficient monitoring and control across all units. The Treasurer interacts with the system by receiving Accumulated Data from All Units, which forms the basis for the Recording of Income and Expenses as well as the preparation of financial statements such as the general ledger and balance sheet. The system also generates a Profit-Sharing Report (SHU) that summarizes the cooperative's financial performance and distributes the results to both at the Annual Member Meeting (RAT) for evaluation and to Members as part of the profit-sharing process.

4.4 Proposed System

Digital transformation in cooperative accounting information systems through the implementation of a web-based platform demonstrates a fundamental difference when compared to manual recording mechanisms. The outputs generated by this system, in the form of unit-level revenue reports and the consolidated cooperative surplus (SHU) report,

represent the integration of data across business units that were previously fragmented. This finding is consistent with prior research, which emphasizes that the digitalization of accounting systems improves efficiency, accuracy, and transparency in organizational financial management (Rom & Rohde, 2007). The web-based AIS integrates all unit revenues into real-time consolidated reporting. This approach resolves inefficiencies and enhances transparency. The system outputs include:

4.4.1 Travel Unit Report



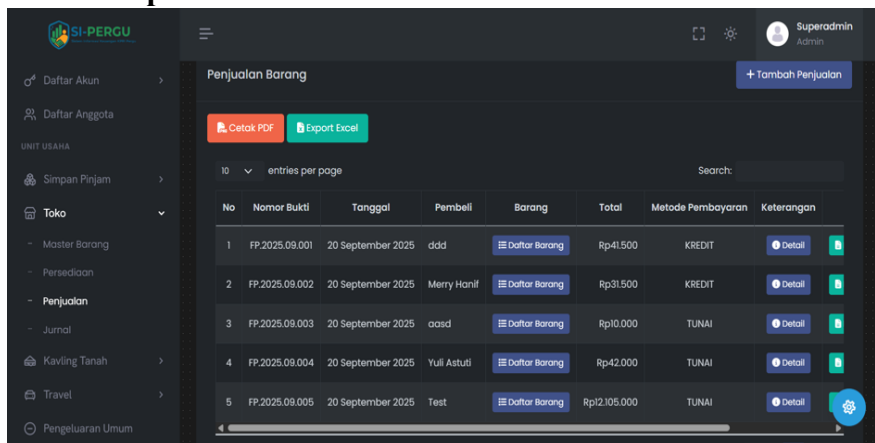
Pendapatan	Nominal
Pendapatan	
Pendapatan Sewa	Rp4.400.000
Pendapatan Admin	Rp1.400.000
Total Pendapatan	Rp5.800.000
Pengeluaran	
Beban BBM	Rp200.000
Beban Sopir	Rp300.000
Beban Servis	Rp100.000
Total Pengeluaran	Rp600.000
	Rp5.200.000

Figure 3. Revenue Report of the Travel Unit

Source: Processed data (2026)

The revenue report of the Travel Unit demonstrated a significant difference in terms of workflow. In the previous system, transportation rental transactions were recorded manually in cash books and later reprocessed into revenue reports. This procedure was prone to delays and data inconsistencies, as it depended heavily on the accuracy of maintenance of individual record keepers. The web-based system has transformed this paradigm by producing reports directly integrated into the database, allowing each transaction to be automatically recorded in the final report. From the user's perspective, this facilitates easier monitoring of unit revenues without the need for manual reconciliation and enables real-time data access by cooperative management.

4.4.2 Retail Unit Report



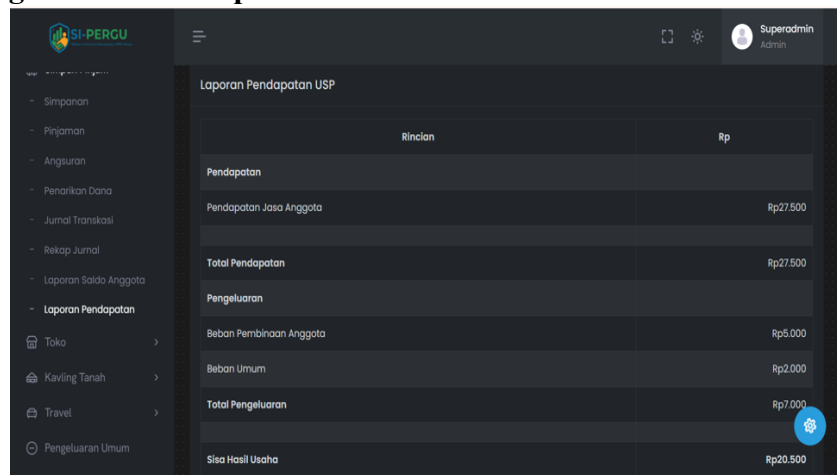
No	Nomor Bukti	Tanggal	Pembeli	Barang	Total	Metode Pembayaran	Keterangan
1	FP.2025.09.001	20 September 2025	ddd	Daftar Barang	Rp41.500	KREDIT	Detail
2	FP.2025.09.002	20 September 2025	Merry Hanif	Daftar Barang	Rp31.500	KREDIT	Detail
3	FP.2025.09.003	20 September 2025	aasd	Daftar Barang	Rp10.000	TUNAI	Detail
4	FP.2025.09.004	20 September 2025	Yuli Astuti	Daftar Barang	Rp42.000	TUNAI	Detail
5	FP.2025.09.005	20 September 2025	Test	Daftar Barang	Rp12.005.000	TUNAI	Detail

Figure 4. Revenue Report of the Store Unit

Source: Processed data (2026)

The Store Unit report represents a significant change in the speed of report preparation. Previously, daily sales transactions had to be manually recapitulated and submitted to the treasurer, whereas the proposed system provides reports that can be accessed at any time. This advantage enhances accountability and efficiency, as all management members can access the same information simultaneously, thereby supporting the establishment of good governance within the cooperative.

4.4.3 Savings and Loans Report

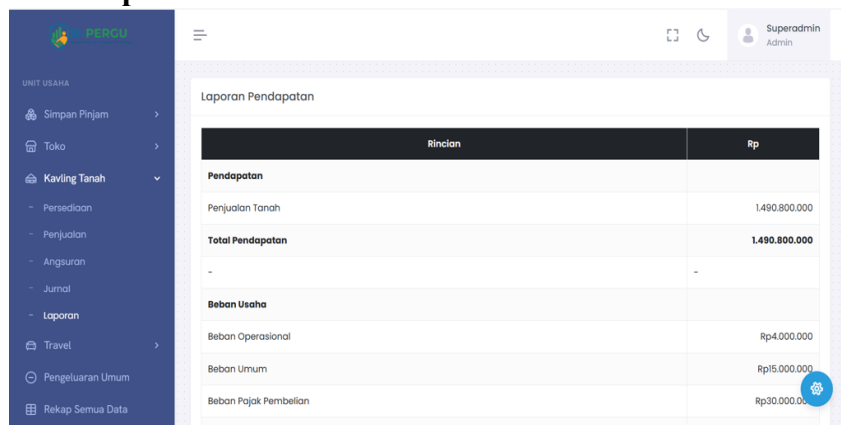


Rincian	Rp
Pendapatan	
Pendapatan Jasa Anggota	Rp27.500
Total Pendapatan	Rp27.500
Pengeluaran	
Beban Pembiayaan Anggota	Rp5.000
Beban Umum	Rp2.000
Total Pengeluaran	Rp7.000
Sisa Hasil Usaha	Rp20.500

Figure 5. Revenue Report of the Savings and Loans Unit
Source: Processed data (2026)

The Savings and Loans (USP) report highlights the importance of transparency in managing member services. In the previous system, transaction data had to be transferred from daily records into Excel format, a process that was not only time-consuming but also posed a risk for redundancy. The web-based implementation automatically integrates transactions into the final report without the need for re-entry, thereby increasing work efficiency and reducing potential errors. For management, this condition facilitates faster decision-making due to the fact that the data obtained is considered valid and reliable.

4.4.4 Land Unit Report



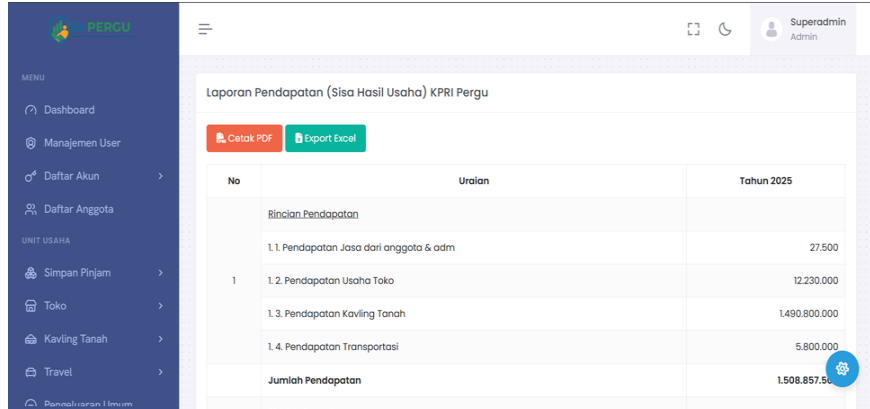
Rincian	Rp
Pendapatan	
Penjualan Tanah	1.490.800.000
Total Pendapatan	1.490.800.000
Beban Usaha	
Beban Operasional	Rp4.000.000
Beban Umum	Rp15.000.000
Beban Pajak Pembelian	Rp30.000.000

Figure 6. Revenue Report of Land Unit
Source: Processed data (2026)

The Land Unit revenue report in the new system provides greater convenience in monitoring and analyzing revenue. Previously, the manual process required separate recording of each transaction, which often caused delays in obtaining a comprehensive

overview of unit performance. With the proposed system, reports can be generated quickly, in a structured and standardized format, thereby enabling management to evaluate more easily the land unit's contribution to the cooperative's overall performance.

4.4.5 Consolidated Revenue Report (SHU)



No	Uraian	Tahun 2025
Rincian Pendapatan		
1.1	Pendapatan Jasa dari anggota & adm	27.500
1.2	Pendapatan Usaha Toko	12.230.000
1.3	Pendapatan Kavling Tanah	1.490.800.000
1.4	Pendapatan Transportasi	5.800.000
Jumlah Pendapatan		1.508.857.80

Figure 7. Revenue Report of the Cooperative's Surplus (SHU)

Source: Processed data (2026)

The Cooperative Surplus Report (SHU Report) of KPRI Pergu presents a summary of the cooperative's financial performance within a specific fiscal period. The report outlines both revenue sources and operating expenses to determine the final surplus, which represents the cooperative's net profit available for distribution to its members.

The revenue section, labeled "Rincian Pendapatan" (Revenue Details), consists of four main components representing the cooperative's business units: Revenue from the Savings and Loans Unit, Revenue from the Store Unit, Revenue from the Transportation Unit, and Revenue from the Land Plot Unit. These components reflect the diverse operational activities of KPRI Pergu, each contributing to the overall income stream. Consolidating revenue from multiple business units ensures comprehensive financial monitoring and enhances accountability within the cooperative's integrated accounting system. The expense section, labeled "Beban Usaha" (Operating Expenses), includes Operational Expenses, General Expenses, Administrative Expenses, and Other Expenses. These represent the cooperative's routine costs incurred in maintaining its operations and services to members. By categorizing expenses clearly, the system supports transparent and detailed financial analysis.

4.5 SUS Score Results Interpretation Scale

The system implementation and evaluation were conducted with selected staff of KPRI Pergu Singosari, involving four cashiers representing each business unit (savings and loans, retail store, transportation, and land plots), as well as the cooperative treasurer and chairperson. User satisfaction was evaluated using the System Usability Scale (SUS) to assess perceived usability of the developed system.

Table 3. System Usability Scale (SUS) Results

No	Statement	P1	P2	P3	P4	P5	P6
1	I think that I would like to use this system frequently	5	5	5	5	5	5
2	I found the system unnecessarily complex	1	1	1	2	1	1

No	Statement	P1	P2	P3	P4	P5	P6
3	I thought the system was easy to use	5	5	5	4	5	5
4	I think that I would need the support of a technical person to be able to use this system	2	3	1	3	2	3
5	I found the various functions in this system were well integrated	5	5	5	5	5	5
6	I thought there was too much inconsistency in this system	2	1	1	1	1	1
7	I would imagine that most people would learn to use this system very quickly	4	5	4	5	4	3
8	I found the system very cumbersome to use	1	1	1	1	1	1
9	I felt very confident using the system	5	5	4	4	4	4
10	I needed to learn a lot of things before I could get going with this system	2	2	3	3	3	3

Source: Processed data (2026)

To determine the system evaluation range and average score, each respondent's total score was calculated and multiplied by 2.5 to obtain the final SUS score.

Table 4. User Satisfaction Score Calculation Results

Description	P1	P2	P3	P4	P5	P6
Initial Score	36	37	36	33	35	33
Total Score $\times$ 2.5	90	92.5	90	82.5	87.5	82.5

Source: Processed data (2026)

Based on the SUS calculation method proposed by Brooke (1996), the system achieved consistently high usability scores across all participants (P1–P6), with individual scores of 90, 92.5, 90, 82.5, 87.5, and 82.5, resulting in an average SUS score of 87.5. According to SUS interpretation guidelines, scores within the range of 86–100 fall into Grade A (best imaginable), indicating that the proposed system demonstrates excellent perceived usability.

The high SUS scores indicate that the web-based Accounting Information System developed for KPRI Pergu Singosari was perceived as highly usable by all participants. The positive responses across all statements, particularly those related to ease of use, system integration, and confidence in using the system, reflect the effectiveness of the RAD approach in developing a system that aligns with user needs and expectations. The consistent positive responses regarding willingness to use the system frequently and the perception that most people would learn to use the system quickly indicate strong user acceptance and readiness for adoption.

4.6 Discussion

4.6.1 Digital Transformation in Cooperative Financial Management

The findings of this study demonstrate that the implementation of a web-based Accounting Information System significantly addresses the challenges faced by KPRI Pergu Singosari in managing its multi-business unit financial operations. The transition from a manual, fragmented recording system to an integrated digital platform represents a fundamental transformation in the cooperative's financial management practices. The identification of performance gaps in cash management and revenue reporting highlights the critical need for digitalization, as manual processes were found to be vulnerable to delays, errors, and inefficiencies. This finding aligns with previous research by Rom and Rohde (2007), who emphasized that the digitalization of accounting systems improves efficiency, accuracy, and transparency in organizational financial management.

4.6.2 Integration of Business Units Through DFD and BPMN

The use of Business Process Modeling and Notation (BPMN) and Data Flow Diagrams (DFD) in the system design stage proved effective in visualizing the cooperative's workflows and identifying integration points between business units (Owen & Raj, 2012). The context diagram (Level 0) clearly illustrates how the system serves as a central hub for collecting, recording, and managing revenue data from all business units, providing a unified view of the cooperative's financial performance. This integration eliminates the previous fragmentation that resulted in duplicate recording and limited monitoring, enabling real-time data access and more informed decision-making.

4.6.3 Usability Evaluation and User Acceptance

The System Usability Scale (SUS) evaluation yielded an average score of 87.5, which falls within the Grade A (best imaginable) category according to established benchmarks (Brooke, 1996; Bangor et al., 2008). This high score indicates that the developed system was perceived as highly usable by the cooperative's staff, including cashiers, treasurers, and leadership. The positive responses across all usability dimensions—including ease of use, system integration, confidence, and willingness to use the system frequently—suggest strong user acceptance and readiness for adoption. The fact that participants rated the system as not unnecessarily complex and not cumbersome to use reinforces the effectiveness of the RAD approach in developing a system that aligns with user needs and capabilities.

4.6.4 Implications for Cooperative Governance

The implementation of the web-based AIS has significant implications for cooperative governance, particularly in terms of transparency, accountability, and efficiency. The consolidated revenue reports generated by the system enable management to monitor the performance of each business unit in real-time, while the automated SHU calculation ensures accurate and timely distribution of profits to members. This transparency is essential for maintaining member trust and demonstrating the cooperative's commitment to good governance (Muslim et al., 2024). The system's ability to provide comprehensive financial reports in a standardized format also facilitates external reporting and compliance with regulatory requirements.

5. Conclusion

This study successfully developed a web-based Accounting Information System (AIS) for the revenue cycle of KPRI Pergu Singosari using the Research and Development

(R&D) method with a Rapid Application Development (RAD) approach. The development stages included requirements analysis, business process design, prototyping, and system implementation. The resulting system, SI-PERGU, integrates all cooperative business units—savings and loans, retail store, land plots, and transportation—into a centralized platform that supports transaction recording, revenue reporting, and automatic real-time calculation of the cooperative surplus (SHU), thereby improving efficiency, accuracy, and financial transparency. The system effectively addresses the performance gaps identified in the existing manual system, including fragmented record-keeping, duplicate reporting processes, limited monitoring capabilities, and delays in financial reporting. Based on the System Usability Scale (SUS) evaluation involving direct cooperative users, the system achieved an average score of 87.5, classified as Grade A (best imaginable). This result indicates high perceived usability, efficiency, and user satisfaction, confirming that the proposed AIS is acceptable and suitable for implementation at KPRI Pergu Singosari.

The theoretical implications of this study contribute to the body of knowledge on information systems development in the cooperative sector, particularly in the context of multi-business unit cooperatives. The findings demonstrate that the integration of R&D and RAD approaches is effective in developing systems that are tailored to the specific needs of cooperatives while maintaining flexibility and responsiveness to user feedback. The success of the SI-PERGU system in achieving high usability scores supports the application of user-centered design principles in information system development for cooperatives, a context that has received limited attention in prior research. This study also extends the understanding of digital transformation in cooperative financial management, particularly in addressing the challenges of fragmented record-keeping and manual reporting processes.

From a practical perspective, the SI-PERGU system provides KPRI Pergu Singosari with a robust tool for managing its multi-business unit revenue cycle. The system enables real-time access to financial data, eliminates duplicate recording processes, and provides accurate and timely reports for decision-making. The consolidated SHU calculation feature ensures accurate and timely distribution of profits to members, strengthening transparency and accountability. For other cooperatives facing similar challenges, this study provides a replicable framework for developing integrated accounting information systems that enhance financial management and governance. The system also supports the digital transformation of multipurpose cooperatives and strengthens financial governance and accountability in the Society 5.0 era, where digital technology integration is essential for organizational sustainability.

This study has several limitations. First, the system development focused exclusively on the revenue cycle, without addressing other financial management aspects such as expense management, asset management, or member services. Second, the usability evaluation was conducted with a limited number of internal users (six participants), which restricts the generalizability of the findings to other cooperative contexts. Third, the evaluation was conducted at a single point in time and did not include a longitudinal assessment of system performance and user satisfaction over an extended period. Fourth, the study did not compare the developed system with other similar systems or benchmark against industry standards beyond the SUS framework. Fifth, the study was limited to a single cooperative, which may limit the applicability of the findings to cooperatives with different characteristics or business models.

Future research should expand the scope of the system to include other financial management modules, such as expense management, budgeting, and asset management, to provide a comprehensive solution for cooperative financial management. It would also be valuable to conduct a longitudinal evaluation to assess the long-term impact of the system on cooperative performance, efficiency, and member satisfaction. Comparative studies across multiple cooperatives with different characteristics would enhance the generalizability of findings and provide insights into contextual factors that influence system adoption and success. Additionally, integrating advanced features such as data analytics, dashboard visualization, and mobile accessibility could further enhance the system's usefulness and user experience. Finally, exploring the integration of the system with other cooperative management functions, such as member services and governance, would provide a more holistic approach to cooperative digital transformation.

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