

Developing A Web-Based Application for Enhanced Transparency and Accountability of Financial Management in A School Cooperative Context

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ABSTRACT

Purpose – Previous reports noted issues relating to transparency and accountability in the management of school cooperatives due to system errors, inefficiency, and limited real-time tracking with manual record-keeping of financial transactions. This study presents an application geared to tackle such challenges and lay the groundwork for further development in managing co-op financial needs.

Design/methodology/approach – A Design and Development Research (DDR) approach was used along with the Software Development Life Cycle (SDLC) with the Waterfall model. Data collection involved observations, interviews, documentation review, and questionnaires. The system was developed through five phases: analysis, design, implementation, testing, and maintenance, all of which were carried out with the aid of this survey. The evaluation involved two information technology experts who were complemented by two accounting specialists. It included feasibility and user-driven usability assessments through a five-point Likert-scale instrument with five participants. Evaluations of transaction processes and financial reporting times before and after the application's launch were used to track operational metrics over 30 transactions.

Finding/Results – The findings suggest that the application is highly feasible in context and received very positive feedback throughout the limited testing. Feasibility of technology increased from 90% to 97.5%, while financial and accounting feasibility increased from 89.06% to 96.88%. Usefulness and satisfaction reached 98.18%. Operational appraisals also found time-related benefits in processing transactions and decent financial reporting.

Originality/Value – This is an original study which optimizes accounting information system, real-time reporting, and inventory management a web-based solution. The researchers address only modest operational performance measures in to complement perception-based assessments in a small-scale environment

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1. Introduction

Digital transformation has leveraged various industries, largely driven by the Fourth Industrial Revolution. This change impacts not only organizational operations but also redefines the creation and delivery of value to stakeholders (Wijoyo & Widiyanti, 2020). The transformation is characterized as a strategic initiative designed to improve efficiency, transparency, and competitiveness throughout all organizational processes with the support of digital technologies (Plekhanov et al., 2023). Given its massive impacts on diverse aspects of life, organizations need to adapt to these changes while leveraging technology to improve governance performance.

In the cooperative sector, literature has demonstrated that digital transformation has increasingly gained traction in supporting transparent and accountable management. While digitalization offers a multitude of advantages, such as enhanced member engagement, improved operational efficiency, and broader market access, its implementation is not without challenges. These challenges yield a direct impact on the quality of financial management, particularly transparency and accountability. For instance, micro and small-scale cooperatives often struggle in ensuring proper financial management because of limited infrastructure, suboptimal technological literacy, and weak systems in management (Minzar & Mishra, 2024).

As a result, in school cooperatives, these aspects are often even more complicated, because cooperative management in a school context occurs simultaneously with teaching-learning activities. Consequently, management is often managed by administrators without proper accounting or technological literacy. This might explain why many school cooperatives continue to hold transactional items handwritten and, on a spreadsheet, where reporting can be late, record inconsistent transactions due to multiple entries. This is not only detrimental to transparency in finance but also limits the capacity of stakeholders to evaluate cooperatives' performance. Transparency and accountability in cooperatives are indeed an expectation set forth in the Regulation of the Minister of Cooperatives and Small and Medium Enterprises Number 2 of 2024. The regulation is an impetus to boost cooperatives' integrative systems capabilities so that they can source and disseminate accurate, relevant, and timely information. The literature has some research which suggests that the solution to these problems might be the adoption of the Accounting Information System (AIS). Puspitarini et al., mention that AIS is widely validated to support systematic processing of financial information to produce accurate and efficient financial reporting (Puspitarini et al., 2023). Furthermore, it operates on web-based technology, providing wider availability, real-time reporting, and enhanced transparency (Maryanti et al., 2026).

School cooperatives serve both as economic organizations and as avenues for student learning. They facilitate economic activities within the school while promoting entrepreneurial values and principles of cooperation (Alimin, 2022). What distinguishes school cooperatives from typical cooperatives is their reliance on manual systems, which are prone to frequent failures due to inefficiencies and a lack of transparency and accountability. To capture the implementation of financial governance within a school setting, the researchers observed the school cooperative of Yayasan Ar Roudhoh in Jember. This showed a very heavy reliance on manual administration and traditional spreadsheets, which means there was duplicated work and a high risk of human error. Manual transaction recapitulation caused the preparation of monthly financial reports to be

delayed. Previous studies show that digital financial tools have been of great help toward efficiency improvement, accuracy, and transparency (Khoirunnisa & Susanti, 2024; Triadiarti et al., 2024; Wiratama et al., 2023). In addition, the advent of web-based and cloud-based technologies in educational organizations may play a role in enhancing quality reporting and decision-making (Agarina et al., 2018; Vidyasari et al., 2026). However, most of this literature has concentrated on standard school financial management or payment systems. There is a significant dearth of research focused on building web-based financial platforms for school cooperatives that contribute to transparency and accountability.

Exploring this matter in a fresh light, this research is centred on a particular web-based platform, which could be employed to realize: (1) cooperative financial recording in harmony with principles of an accounting information system; (2) inventory management directly correlating with the transaction processing system; (3) reporting features, which provide transparency for faster access to financial oversight by stakeholders. In contrast to past research that dealt mostly with payment administration systems or the general financial structure, this study aims to develop governance-based solutions focusing on school cooperatives. The present research seeks to solve practical problems for handling transaction information at local school cooperatives, inventory level monitoring, and precise financial reporting by using a web-based platform.

2. Literature Review and Hypothesis Development

Digital Transformation of Cooperatives

A cooperative is based in fairness, cooperation, and the welfare of the community. Its core goal is to improve the interests of its members while distributing benefits fairly and ensuring governance is democratic. All members have equal voting ability in decision-making processes (S. Thayf et al., 2022). Cooperatives are founded on principles that distinguish them from other types of business organizations. These include open and voluntary membership, democratic decision-making in which each member has equal voting rights, and equitable contribution to and sharing of the cooperative's capital and benefits.

Cooperatives aims to educate and train its members, essentially empowering its members. They also seek to participate in community development and environmental sustainability (Bokoumbo et al., 2026). They include entities not only defined by how operationally targeted activities are but also those defined by the membership criteria (Rosdaliva et al., 2023). The primary goal involves improving members' living standards, reducing economic inequality through equitable benefit sharing, supporting MSMEs with accessible financing, promoting economic democracy through equal voting rights, and encouraging socially and environmentally responsible business practices oriented to community-centered economies (S. Thayf et al., 2022). Notwithstanding, they encounter challenges such as operating on a small scale with many growth pathways and disparities in living standards and educational attainment (Autsadee et al., 2023).

Several initiatives can be undertaken to strengthen the cooperative's roles. They can focus on the digitalization plans, which could increase their operating capacities and offer better service accessibility (Siswanto et al., 2024). Rapid technological advancement has reshaped the economic activities of a country, emphasizing industrial development, which is

associated with Industrial Revolution 4.0 (Wijoyo & Widiyanti, 2020; Islami et al., 2021). Digitalization improves operational efficiencies by 40 percent through ensuring cost savings and efficient resource use (Siswanto et al., 2024). However, technological illiteracy, deficiency in infrastructure and unwillingness to change to issues sometimes pose challenges (Minzar & Mishra, 2024).

Accounting Information System (AIS)

Effective information systems are classified into six types: data subsystems, management information systems, decision support systems, expert systems, executive information systems, and accounting information systems (AIS) (Ananda & Putri, 2024). Among these, AIS plays a vital role; it is structured to gather, classify, manage, analyze, and transform both financial and non-financial data related to financial transactions. AIS generates important insights that aid in the planning, monitoring, and administration of organizational operations (Puspitarini et al., 2023).

AIS generates financial and accounting information from standard transactions comprising a number of operations: sales orders, purchase orders, payments, cash receipts, and payroll processing. The system facilitates the integrated flow of data, facilitating effective operational procedures and precise reporting (Maulida et al., 2023). It helps to prepare and manage transactions with a view to giving real-time financial and managerial insights to internal and external stakeholders, which therefore aids in good decision-making and enhancing financial reports (Hastuty Hs et al., 2023).

However, the successful AIS requires a high degree of organizational commitment and cultural fit. When employees are deeply committed to the organization, they will feel supported and adopt its goals. Likewise, an effective organizational culture positively affects the extent of the effective integration of AIS; this will significantly raise the quality of accounting information (timeliness, accuracy, completeness, relevance). A great deal ought to go into building a positive organizational commitment and organizational culture, which considerably influences the commitment and the morale in making use of the AIS to achieve sustainable organizational aims (Nurhayati et al., 2023).

AIS enables users to output precise, comprehensive, and timely financial data that bolsters internal control mechanisms. An example of such an application would be the management and monitoring of School Operational Assistance (BOS) funds—an implementation recognized for its efficiency, effectiveness, and minimal errors (Ananda & Putri, 2024). Specifically, AIS helps them in transparent and accountable financial management in cooperatives while keeping regulations in place. One notable application involves overseeing the management of School Operational Assistance (BOS) funds—an implementation recognized for its efficiency, effectiveness, and minimal errors (Ananda & Putri, 2024).

Web-Based Accounting Information System

It is acknowledged that AIS, which employs web-based technology, improves accessibility, flexibility, and capacity to process data in real time. Previous studies have shown that online financial systems can give users a continuous means of accessing and managing financial information whenever and wherever (Maryanti et al., 2026)

These advances are substantially improved in making things more effective and enabling improved decision-making. In addition, web applications facilitate real-time data entry

and reporting, which are crucial to the accuracy and timeliness of financial reports. They further facilitate better communication between organizations and stakeholders, leading to better transparency in financial reporting (Lopung & Rulindo, 2023).

From a management perspective, digital financial information systems facilitate the electronic capturing of revenues and expenses, reduce the dependence on traditional methods of manual processes, and help organizations take advantage of better financial management in general (Christian et al., 2022). These benefits explain why recent research advocates the use of web-based Accounting Information Systems as a way to modernize financial management frameworks.

Good Corporate Governance (GCG)

Good Corporate Governance (GCG) refers to a collection of standards, principles, and mechanisms that guide the management of organizations with the aim of promoting transparency, accountability, independence, and fairness (Fitrianingsih & Asfaro, 2022). The primary objective of GCG is to safeguard stakeholder interests, minimize information asymmetry, and enhance organizational performance (Ramadhani & Agustin, 2021).

While nonprofit organizations such as religious institutions do not focus on maximizing profits for their investors, implementing GCG practices is still a prudent approach as it bolsters the organization's credibility. Studies have shown that GCG has a notable impact on financial performance Ramadhani & Agustin, (2021), earnings management practices, and overall efficiency in nonprofit organizations (Nugraha & Endraswati, 2022). In this regard, GCG acts as an instrument for ensuring accurate, transparent, and accountable communication within nonprofit contexts.

Nugraha & Endraswati (2022) outline seven fundamental principles of GCG applicable to nonprofit organizations: (a) transparency—making information accessible to all; (b) accountability—ensuring consistency between actions taken and established guidelines; (c) rule of law—requiring a solid legal framework for operations; (d) strategic vision—encouraging proactive leadership aimed at fostering positive transformation; (e) professionalism—aligning program relevance with the organization's vision and mission; (f) responsiveness—considering the needs of all stakeholders; and (g) efficiency and effectiveness—necessitating thorough planning and execution for successful operations.

Synthesis of Literature and Research Gap

As per the literature review, internet-based technology could provide the guarantee of the maximum level of financial transparency, accountability, and increased effectiveness of operations. Application of GCG within the management of organizations could become a possible approach for the enhancement of the aspects mentioned above.

However, majority of previous studies concentrated mainly on the problems of financial management systems and payment systems in digital form, and not many researchers paid attention to the development of integrated web-based financial applications for school cooperatives. Building upon these prior findings, this study posits that integrating GCG principles with digital financial systems such as AIS can improve transparency, accountability, and the overall quality of governance in cooperative financial management. This research seeks to fill this gap in the empirical studies while developing and evaluating a web-based financial application for school cooperatives management.

3. Methodology

This research utilized a Design and Development Research (DDR) approach for the creation and evaluation of an online financial application. The primary goal was to improve transparency and accountability within the school cooperative management established by Yayasan Ar Roudhoh in Jember, Indonesia. Implementing Saravanos & Curinga (2023) framework, the development followed the methodology of Software Development Life Cycle (SDLC), namely the Waterfall model comprising analysis, design, implementation, testing, and maintenance.

Data used for the study were collected through interviews with three administrators in charge of transaction recording, inventory control, and financial reporting. In addition to this, two IT specialists specializing in web application development and two accounting professionals specializing in cooperative financial reporting added their guidance on the feasibility assessment. Five end users (both cooperative administrators and staff members) engaged directly with system interaction during its trial phase of evaluating system effectiveness.

The researchers began the design phase by initiating a system model. The application was designed by referring to a role-based access model to allow users to assume several roles, which consist of administrator, treasurer, and supervisor. Administrators had the authority to manage system users and master data. In addition, the treasurers dealt with transactions and financial report, and supervisors had full access to the monitoring and reporting capabilities.

The researchers operationalized PHP as the programming language in developing the application, Laravel to guide the web application, MySQL to facilitate database management, and Apache to develop the local server environment. To allow a centralized data storage and browser-based access, the researchers designed the application architecture in such a way using a client-server model. These involved login authentication, inventory management, sales and purchase transactions, cash flow recording, financial report generation, and dashboard monitoring. The reporting module was meant to make possible automated generation of financial summaries from previous transactions.

Because transparency and accountability were so integral to the monitoring and verification of every financial process, this was an integrated security process that included access control systems, password-based authentication, activity logging, and tracking of user and transaction history. In other words, the audit trail tracked the complete processes for inputting data, modifying data, and deleting data and reconstructs each individual user's behavior.

The implementation phase entailed mainly testing the system development results to check that they satisfy all design requirements. Once the system development was complete, the system was implemented in the target environment (cooperative environment). The real-world transaction data derived from the cooperative allowed for field-testing the system. The testing of the system took place in two stages: first, a feasibility test conducted by information technology and accounting personnel to assess the system's economic and technical feasibility. Second, the cooperative managers, as end-users judge whether the system works well under real operating situations.

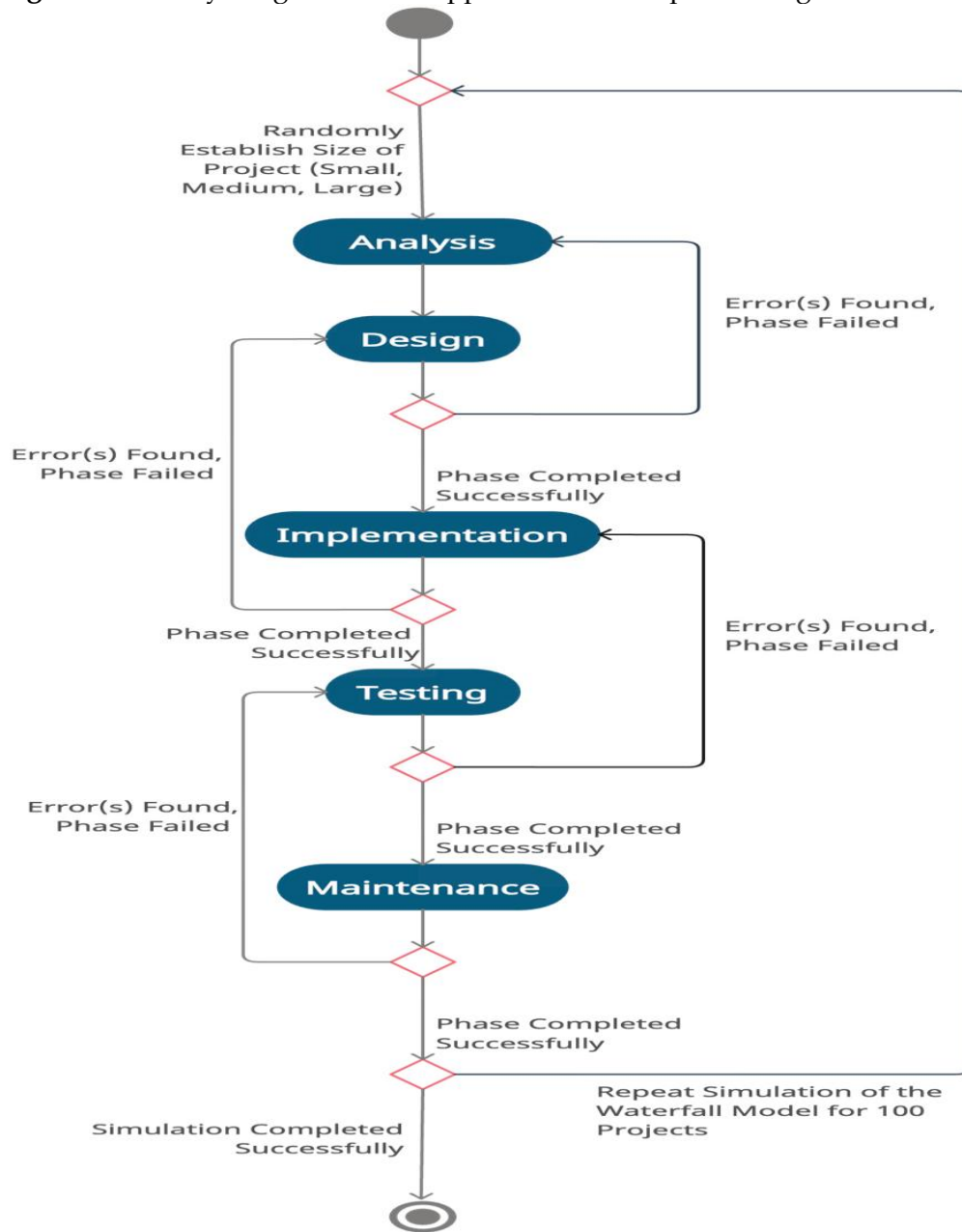
The system feasibility instrument includes 20 assessment items: interface design, system functionality, security, navigation, and performance efficiency. Furthermore, 16

assessment items are developed, covering transaction accuracy, reporting conformity, compliance with accounting standards, and financial transparency in order to assist the feasibility test from an accounting perspective. In addition, 22 final assessment items were also developed in order to measure such key aspects as ease of use, accessibility, speed of report generation, system usefulness, and user satisfaction—which are vital dimensions for judging a system's effectiveness from the user perspective when looking at the results of user testing. The questionnaire items were selected from the items in the survey questionnaire following a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Expert validators assessed the validity of the instrument before its implementation, and reliability testing of the user questionnaire resulted in a Cronbach's Alpha coefficient of 0.89.

The results collected were treated descriptively quantitatively. Interpretation of the parameters was 0–20% (very poor), 21–40% (poor), 41–60% (sufficient), 61–80% (good), and 81–100% (very good). Research also involved questionnaires, but there were also some observations made by calculating the duration of transaction recording and preparation of financial reports prior to and after the implementation of the application. At the last stage, these researchers carried out their maintenance based on monitoring the system performance for changes or enhancements.

The research authorization was obtained from Ar Roudhoh Foundation and the school cooperative management before conducting the study. Also, for each participant in the interviews and testing phase, a description of the purpose, methods, and benefits was given, and informed consent was obtained. Following the principles of data confidentiality and informed consent, the authors demonstrate academic integrity and ethical responsibility in research.

Figure 1. Activity Diagram of the Application Development Stages



4. Result and Discussion

Results

a. Analysis Phase

1) performance analysis

The researchers studied the financial management system to identify the current system's performance, major operational limitations, and issues. The analysis focused on the inefficiencies in the areas of transaction processing, financial report generation, data management, and monitoring.

Table 1. Analysis of Existing System Performance and Identified Problems

No	Identified Problem	Description	Impact
1	Manual transaction recording	Transactions were recorded using cash books and repeated calculations	Increased risk of errors, especially during peak transactions
2	Unstructured data management	Financial documents were stored without systematic organization	Difficulty in data retrieval and high risk of data loss
3	Inefficient financial reporting	Reports were compiled manually	Time-consuming process and potential inconsistencies
4	Lack of real-time monitoring	Financial data could not be accessed in real time	Reduced transparency and delayed decision-making

The findings are presented in Table 1. The results indicate the poor functioning and incoherence of the current manual system, especially in data handling, reporting accuracy, and real-time monitoring. The researchers discovered that without one systematic approach to a digital financial system for cooperative financing, efficiency, accuracy, and transparency will be poor.

Current systems were inefficient from a management perspective due to not properly integrated data control as identified in the study. As a consequence, there was an error in reporting which was one of the most common issues. The aforementioned limitations highlight the need for a better organised, digital financial processes to contribute to the development of such a cooperative financial management performance on a more accurate, efficient and transparent co-management process.

In preliminary observations, the recording of transactions was also found to take ~4–6 min per transaction as administrators were prompted to record data in notebooks manually before signing it into spreadsheets. Financial reports at the monthly level proved similarly difficult and were conducted over around 2 to 3 working days. We also detected inventory discrepancies, since stock updates were noted in different logs, not transaction histories.

2) Needs Analysis

Several problems were found connected with the performance of financial management according to the researchers. The requirements were categorized into functional and non-functional components, as shown in Table 2.

Table 2. System Requirements Analysis

Identified Issues	Description	Impact
Functional issue	Transaction recording	financial transactions automatically documented
Functional issue	Inventory management	Product stock and updates inventory data managed in time

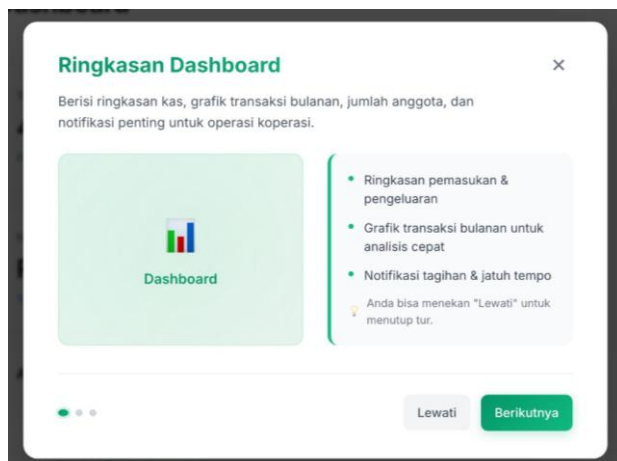
Identified Issues	Description	Impact
Functional issue	Financial reporting	Automatic composition of financial reports
Functional issue	Product management	Proper management of product data and pricing
Functional issue	User authentication	Proper control of access through login and user roles
Non-functional issue	Usability	Seamless control and navigation of system for cooperative administrators
Non-functional issue	Data security	Strong protection of financial data from unauthorized access
Non-functional issue	Efficiency	Accurate and fast data processing
Non-functional issue	Reliability	Consistent system performance with minimal errors
Non-functional issue	Interface consistency	Consistent and intuitive interface

The table illustrates that the entire system operates with various types of functionality including: transaction processing, inventory management, financial reporting, and user authentication. The interviews revealed that some significant capabilities were developed during this period, such as real-time financial summaries, transaction history tracking, and improved access to financial reports.

b. Design and Implementation Results

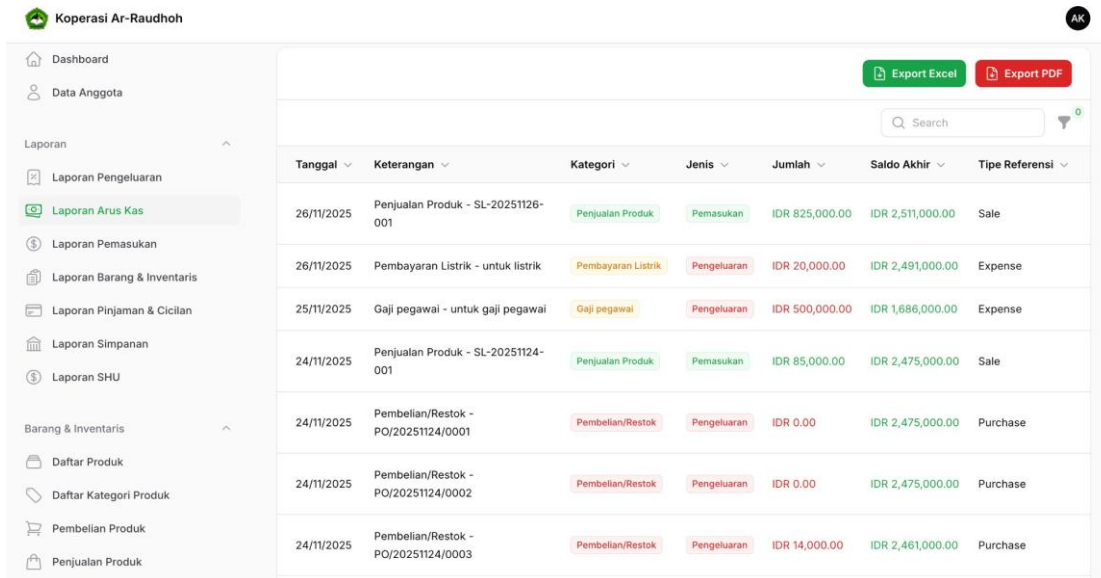
The study showed that the web-based financial application needed to cater to several functions to support cooperative financial management. The initial design of the application interface was performed in a straightforward and intuitive manner to assist users of different levels of technological literacy.

Figure 2. The Dashboard Interface



As shown in Figure 2, the system dashboard presents real-time financial information, e.g., summary of income, expenses, and balances. These features support faster, more accurate, and data-driven decision-making. Furthermore, the dashboard displays inventory summaries, recent transactions, and notifications regarding low stock availability.

Figure 3. Example of an Automatically Generated Report



Tanggal	Keterangan	Kategori	Jenis	Jumlah	Saldo Akhir	Tipe Referensi
26/11/2025	Penjualan Produk - SL-20251126-001	Penjualan Produk	Pemasukan	IDR 825,000.00	IDR 2,511,000.00	Sale
26/11/2025	Pembayaran Listrik - untuk listrik	Pembayaran Listrik	Pengeluaran	IDR 20,000.00	IDR 2,491,000.00	Expense
25/11/2025	Gaji pegawai - untuk gaji pegawai	Gaji pegawai	Pengeluaran	IDR 500,000.00	IDR 1,686,000.00	Expense
24/11/2025	Penjualan Produk - SL-20251124-001	Penjualan Produk	Pemasukan	IDR 85,000.00	IDR 2,475,000.00	Sale
24/11/2025	Pembelian/Restok - PO/20251124/0001	Pembelian/Restok	Pengeluaran	IDR 0.00	IDR 2,475,000.00	Purchase
24/11/2025	Pembelian/Restok - PO/20251124/0002	Pembelian/Restok	Pengeluaran	IDR 0.00	IDR 2,475,000.00	Purchase
24/11/2025	Pembelian/Restok - PO/20251124/0003	Pembelian/Restok	Pengeluaran	IDR 14,000.00	IDR 2,461,000.00	Purchase

Figure 3 is a financial report produced by the system automatically. This report attempts to enhance report accuracy and alleviate the manual work to overcome the major obstacle in cooperative financial management. Reporting process automation automates financial information processing, ensuring efficiency and accountability as well as the accuracy of the financial information that is obtained. Another key improvement in this system is the availability of multi-user access, an audit trail, and data security features.

The multi-user access feature enables the assignment of roles and powers based on levels of authorization, and the audit trail provides a digital trail providing the possibility of following and validating each individual user's actions. The security mechanism provides a mechanism to maintain the secrecy and integrity of financial data from unauthorized access as well as data manipulation. These different characteristics add to the technical capability of the system and improve the actual realization of the transparent, accountable, and auditable principles.

First of all, there is a login and authentication module; Then comes the transaction entry module; Further, there are inventory management modules; Then, a financial report module; Fifth, an audit trail module; And finally, the user access control module. Such an interrelation of modules is aimed at creating an effective and transparent financial management process. The system updates inventory balance and financial reports right after transaction entry.

Besides, the audit trail module also monitors all operations made by a user, as well as all data from entry and modification to deletion. It is presumed that such a feature improves traceability and accountability, since all actions of a user are recorded and can be verified whenever needed. They concentrate on the prevention of unauthorized data modifications and improvement of financial governance processes.

c. System Testing Results**1) Technology Feasibility**

An evaluation was carried out through two-stage evaluation with 20 evaluation indicators. System feasibility score was significantly improved from 90% (Phase I) to 97.5% (Phase II) based on quality assessments. Both scores are in the very feasibility range, but several modifications were made for improved usability, system security, and interface consistency.

Table 3. Technology Feasibility Evaluation (Phase 1)

Aspect	Score	Category
User Interface (UI)	14/16	Very Good
User Experience (UX)	15/16	Very Good
Application Features & Functionality	15/16	Very Good
Data Security & Access	13/16	Good
Technical & System Compatibility	15/16	Very Good
Total Score	72/80	Highly Feasible
Percentage	90%	Highly Feasible

At first, the system has satisfied the majority of the established technical criteria. The integrated interface design, system functionality, and user experience received “very good” in many respects. These results demonstrated that several technical features should be improved for better general reliability, ease of use, and security of the system.

Table 4. Technology Feasibility Evaluation (Phase 2)

Aspect	Score	Category
User Interface (UI)	15/16	Very Good
User Experience (UX)	16/16	Very Good
Application Features & Functionality	16/16	Very Good
Data Security & Access	16/16	Very Good
Technical & System Compatibility	15/16	Very Good
Total Score	78/80	Highly Feasible
Percentage	97.5%	Highly Feasible

Phase II assessment indicated that the system optimized successfully. The overall feasibility score increased by 7.5% with a variety of improvements on security mechanism, usability consistency, and stability of the features applied by researchers. At this phase, various technology validation metrics were assessed, including login security, consistency of navigation, system response speed, browser compatibility, database connectivity, feature functionality, and overall reliability. The researchers made adjustments to session security protocols as well as menu navigation and interface responsiveness. This allows users to engage with the application across different screen sizes and devices while seamlessly transitioning between screens.

2) Financial and Accounting Feasibility

The financial feasibility and accounting feasibility of the system were examined by two accounting professionals. This led to a significantly higher whole-assessment level score: from 89.06% in Phase I to 96.88% in Phase II. Both these types of accomplishments are considered to be very high in feasibility, given the improved financial reporting, enhanced data visualization, strengthened data filtering features, and data export capabilities.

Table 5. Financial and Accounting Feasibility Evaluation (Phase 1)

Aspect	Score	Category
Financial Structure & Transaction Flow	16/16	Very Good
Financial Recording & Reporting Features	12/16	Moderate
Compliance with Accounting Principles & Regulations	16/16	Very Good
Ease of Use for Cooperative Administrators	13/16	Good
Total Score	57/64	Highly Feasible
Percentage	89.06%	Highly Feasible

The researchers discovered that 57 out of 64 (89.06%) scored the evaluation of the application as very feasible. Furthermore, the application excelled in terms of financial structure, transaction flow, compliance with accounting standards, and usability. Once more, all statistics of these points were rated "very good" in ratings. In contrast, several features of the financial recording and reporting, such as the cash flow reporting facilities and automatic generation of journals and ledgers, were rated low. These data were also categorized as being of "moderate" performance. These results show that the system can be further augmented to ensure that the financial reporting features can lead to sound financial governance practices.

Table 6. Financial and Accounting Feasibility Evaluation (Phase 2)

Aspect	Score	Category
Financial Structure & Transaction Flow	16/16	Very Good
Financial Recording & Reporting Features	14/16	Good
Compliance with Accounting Principles & Regulations	16/16	Very Good
Ease of Use for Cooperative Administrators	16/16	Very Good
Total Score	62/64	Highly Feasible
Percentage	96.88%	Highly Feasible

There was a marked increase in feasibility by 7.82% from the initial stage. Further confirmation came from the second-stage financial and accounting feasibility test that yielded 62 out of 64 (96.88%), also indicating a very high degree of feasibility. The validation that was carried out on the accounting side included checking the correctness of the transactions, completeness of

the reports, balancing of accounts, cash flows, compliance with the accounting principles of cooperatives, and transparency of the financial information.

3) Effectiveness Testing

The other test, which comprised 5 end users, was conducted to check the effectiveness of the application through targeting cooperative administrators and staff members as the end users. The score of 98.18% overall suggested a good performance rate of the service. The system was shown to improve transaction recording efficiency, financial reporting accuracy, ease of use, and user satisfaction.

Table 7. System Effectiveness Evaluation Results

Aspect	Score	Category
Feature Usefulness & Suitability	35/35	Very High
Efficiency & Productivity	25/25	Very High
System Reliability & Security	19/20	Very High
Ease of Use	14/15	Very High
User Satisfaction & Retention	15/15	Very High
Total Score	109/110	Highly Effective
Percentage	98.18%	Highly Effective

Table 7 shows that cooperative administrators, as end users, assigned high scores for the application's effectiveness. The application achieved a total score of 109 out of 110 (98.18%), which is classified as "highly effective." The researchers also carried out operational performance comparisons between the previous manual system and the developed web-based application. The comparison results are reported in Table 8.

Table 8. Comparison of Manual and Web-Based Financial Management Processes

Operational Activity	Manual System	Web-Based System
Average transaction recording time	4–6 minutes	1–2 minutes
Monthly financial report preparation	2–3 working days	Less than 1 day
Inventory update process	Manual recapitulation	Automatic real-time update
Data retrieval process	Searching physical documents/spreadsheets	Instant search through the system
Transaction traceability	Difficult to track revisions	Audit trail available

Operational performance was quantified using structured observation of transaction processing activities and financial reporting activities both before and after implementation of

the system. Transaction processing time was measured by real-time data entry time, which was measured from the beginning of data entry until the transaction was completely recorded in the system. Financial reporting preparation time was calculated based on total time taken by the cooperative administrator for the preparation of monthly financial reports.

There have been noticeable improvements in the operation of the system after its implementation. Data input was made faster due to automated data entry and processing. It was possible to make financial reports using only recorded transactions without additional recapitulation. Moreover, inventory data were automatically adjusted after each transaction. The results of the analysis of the effectiveness of the use of the system demonstrated that the application can aid in financial management of cooperatives because of efficiency increase, administrative workload reduction, and accelerated report-making.

Nevertheless, these results can be considered preliminary observations concerning the system's operational aspect because the study was conducted on the basis of the implementation of the system during about two weeks, involving about 30 transactions. Thus, there was no objective evaluation in terms of recording errors reduction, audit quality improvement, stakeholders' access frequency, financial discrepancies reduction, and report consistency improvement. As such, these operational improvements cannot be considered sufficient evidence of increased accountability of the organization but just some preliminary information about the system's potentials.

Key attributes such as automated reporting, audit trails, and integrated transaction processing were observed to improve transparency and accountability in the management of cooperative finances. Nevertheless, the researchers noted some minor drawbacks related to backup/restore capabilities and interface optimization; however, both aspects fell within an acceptable performance threshold.

d. Maintenance Results

In the maintenance stage of the application, stable operation during the early, very brief test was observed. There were no major technical issues while in place for the first phase of the approximately two-week intervention period. These findings demonstrate that the app provided regular transaction recording and report formation under real operation conditions. Ultimately, however, the test failed to illustrate the system's long-term stability and reliability. However, these enhancements were marginal and were mainly made around user interface and feature improvements. Then, the researchers tried to make changes so the application itself was a user-friendly product, and the end-user experience would be consistent from its user end view.

The maintenance phase test results show that the system was fairly stable and flexible within a limited testing duration. The administrators stored transaction records with the application every day and reported them. In the maintenance period, some of the potential improvement included device optimization, automatic backup of data, and integration with a digital payment.

Discussion

Technology Feasibility Test

Th results have demonstrated that the first-stage feasibility evaluation showed a fairly high rate at 90%, which was categorized into high feasibility. The second-stage evaluation captured an increase to 97.5% following the application revisions. The application has shown strong performance with regard to the interface design, feature functionality, accessibility, and compatibility. These results cohere with previous studies that emphasize on the usability, security, and operational stability as key principles to support successful financial information system integration within educational setting (Abidin et al., 2023).

Notwithstanding, the researchers highlight that the evaluations were mainly based on expert evaluation within short term testing. The results are therefore not sufficient to make claims on successful implementation and suitability within a real organizational setting. This should not go ignored as there seems not to be a consistent approach to the end-user agreement and expert validation implying overall long-term consistent adoption or successful reallocation to current operational needs in different settings. Long-term user usage will depend on user training, infrastructure robustness, technical maintenance, and organizational commitment to digital governance. In one of these areas of validation (CAPTCHA attachment), adaptation at the first stage leads to improvement in session security and interface response and enhances navigation experience.

The improvements are in line with Di Nocera et al.'s doctrine of usable security that states system security needs to be balanced with convenience for users. The advantages and in-depth benefits of feasibility testing can, in fact, be explained with information system assessment. Also, recent surveys from AIS further show that system quality, information quality, service support, and internal control significantly influence user satisfaction, which is one of the major factors behind high system performance overall (Lutfi, 2023).

The system's design seems to contribute through several working mechanisms. Transparency is actualized through real-time dashboard reporting, central access to data, automatic generation of financial report, and visibility into the history of transaction. These properties allow supervisors and administrators to monitor the cooperative financial conditions more easily compared to when using a manual reporting procedure. Moreover, accountability is supported through the infusion of role-based access control, audit trail functions, activity logs, and other features, which help to record user actions in different areas. These include transaction registration, modification, and deletion.

The implementation of role-based access control (RBAC) has been shown to enhance internal governance by regulating system access based on user duties. Several recent studies indicate that RBAC improves access management, boosts effectiveness, maintains organizational security, and reduces the risks associated with unauthorized entry by establishing parameters that restrict users to appropriate actions aligned with their designated roles (Wang, 2026). Additionally, it is crucial to highlight that integrating audit and monitoring systems alongside robust internal controls can significantly benefit both organizational and financial operations (Wu et al., 2024).

The research results further demonstrate that the developed application differs from those documented in previous studies on school financial management in that those only dealt

with payment administration or basic recording in financial context. This was done with the specific unique approach that the research addressed, e.g., transactions, financial reports, inventory synchronization and governance-oriented monitoring. Such a seamless integration allows financial and inventory data to be synchronized and can be assumed to solve inconsistencies associated with manual processes generally seen.

However, the researchers were aware of the need to implement regular security evaluations and improvements, monitor the servers, conduct periodic database backups, and enable user access auditing of financial information. Successful implementation of an application relies not only on the standard of the technology, but also on organizational performance metrics (i.e., readiness). Some school cooperative administrators may have different technological or digital literacy levels and as a result may not efficiently manage the process. This is why frequent training and technical support must be provided to optimize the application. Similar findings show that for small-scale companies, digital transformation is usually subject to barriers related to human-resource readiness and system maintenance capacity (Lemon et al., 2024).

This study has provided useful findings demonstrating that the application can achieve strong technical feasibility, and the governance-related features can facilitate transparent and accountable financial management. Yet, the use of such an application needs to be seen as a tool for regular governance and not as the cure-all to manage a variety of matters of financial governance. Relying on sustainable adoption will depend on long-term support for maintenance, institutional policy support, infrastructure reliability, and continuous user adaptation.

Financial and Accounting Feasibility Test

The financial and accounting feasibility evaluation performed in this study captured the scores of 89.06% in evaluation 1 (first) and 96.88% in evaluation 2. The gains indicate that the app fulfills nearly all accounting and financial reporting functions necessary in school cooperative management. The key indicators highlighted by the experts involved transaction recording structure, alignment with cooperative accounting mechanism, standard, report generation with automatic procedure, and financial data management. These findings are in line with past research in AIS which presents digital financial systems as one of the fundamental supporting structures that can support the completion of transactions, organized financial statements, and timely communication of information. However, governing these variables is crucial for the governance of organizations (Saputra et al., 2024).

But these findings should be treated with caution. A high level of accounting feasibility largely reflects that system mechanism and operating structure serve accounting requirements; they are not assumed to be particularly beneficial for true organizational accountability or financial integrity. These results suggest that accountability will not only be determined by process change but also upon the sustainability of financial operations over the longer term, its regular reappraisal, and play-time with stakeholders, or even support in the longer term for these procedures. Without such backing, enforcement and monitoring of decisions are difficult. This app is designed so that the cooperative accountability through more well-organised input of transaction data, increased

transparency and traceability for integrated financial records and reports can be made in advance. The audit trail functionality also enables users to trace changes to users' financial input or registration (supervisors), and the role-based authorisation limits data in relation to user supervision models. Those layers of governance are appropriate ones because the responsibility sharing of cooperative governance is based on clear distribution of accountabilities and a disciplined monetary counting/tracking and managing. Additionally, it has been documented the recent research states that AIS integration into the organization brings accountability and efficiency to keep internal control by improving verification and monitoring mechanisms for transactions (Fouché & Polo-Garrido, 2024).

From the lens of AIS (Accounting Information Systems), therefore, good internal control constitutes a reliable, consistent and orderly system for transaction authorization, recording, monitoring and traceability. Previous studies underscored that effective AIS governance is built upon well-designed internal controls, monitoring procedures, and audit support, which ensure accountability, data security, and organizational monitoring (Monteiro et al., 2022; Plant et al., 2022). Moreover, audit and control measures will elevate traceability and promote internal audit quality and stringency by allowing verifiable records of user actions and their financial transactions (Wu et al., 2024). These mechanisms are generally acknowledged for data manipulation and support auditing practices.

Another point that deserves further attention is transparency. By creating financial summaries, transaction records, and inventory reports in an actual setting, automatic reporting can be enhanced. Stakeholders do not have to wait for the tedious manual recapitulation to access financial data as was the case with the old system. It assists in timely review by supervisors and reduces information inaccuracies between supervisors and administrators. However, the degree to which transparency can be achieved will heavily rely on institutional policy with regard to report accessibility and the speed at which data is updated. The authors identified several accounting limitations within the application, which were confirmed in the first validation. This included a cash flow report and automated journal generation. These results are consistent with previous evidence that many small cooperative systems find it difficult to implement automatic accounting mechanisms due to inadequate resource development and user capabilities (Siregar et al., 2025).

Following validation or evaluation, the refinement of the application significantly upgraded report-exporting functionality, the capability of dynamic report filtering, and transaction-inventory module interoperability, for a much better quality of the system. To make better decisions, the researchers need things like digital approval processes and analytical dashboards that keep us apprised of financial changes. A few other important factors are data reliability and audit readiness. Web-based financial management systems help document the record consistently and assist in maintaining this information, but they also increase risk due to incorrect registration of data, unauthorized modification, and incomplete data backups.

Similarly, accountability cannot be exclusively on account of software upgrades, nor with a bare minimum standard operating procedure, user discipline, and periodic audits, if the objective of financial management is ultimately to ensure that there is the right and appropriate form of the accounting records. Taken together, the proposed application has

been proven to facilitate cooperative financial operations, and the practicability of its accounting suggests this application represents a step forward in the direction of cooperative financial governance, improving a cooperative organization's reporting model, transaction recording, and visibility of financial information.

Application Effectiveness Test

Five cooperative managers and other members participated in this study to assess the system's performance. For the effectiveness, it was a very high 98.18%. This outcome reflects a very high efficiency of performance of the system. Finally, respondents found that the system performed well in capturing transactions and preparing reports, monitoring activities, and reducing the administrative burden. This has also reduced transaction recording and report preparation time much better than previous manual mechanisms. This is in line with the previous literature, with an emphasis on the efficiency and accountability capability of financial management and on the deployment of a digital financial system (Wulansari et al., 2025).

The effectiveness assessment should be treated with caution. Only the user experience and operational practices from a short-term perspective have been seen in this evaluation, while the institutional practices over a longer period have not been observed. These just add up to positive feelings about the application — high levels of satisfaction do not mean ongoing, long-term behaviour change. Those possible gaps warrant further analysis using longitudinal indicators, that is, the consistency of reporting, minimization of financial discrepancies, audit performance, and long-term system utilization patterns.

The process of recording transactions is now quicker than it was before since the financial reporting is no longer managed by manual computation. The transformations demonstrated that a web-based platform-based system significantly improves operational efficiency. Further, results from this work's operational comparisons should be seen, ultimately, in the context of an exploratory study, too. Despite the fact that the study had found significant reductions in transaction processing times and reporting, the researchers did not evaluate the reduction of recording errors, audit quality, stakeholder engagement, levels of financial disparities, and reporting mechanism longevity.

On a governance front, the application helped to improve not only transparency but also democratize financial information essential for accessibility and to reduce reporting lags. It has also accomplished a good job of increasing accountability due to transaction traceability and user authorization supervision. These expanded functions set apart the application from the classic financial systems of traditional schools, which have been broadly reported to be payment systems mainly since it focuses on their payment administration and they do not perform audit procedures.

Despite the confirmed advantages of the application, there are hurdles to its adoption. It is mostly dependent on a decent internet connection and the administrator who operates the application regularly. Assumedly, the failure to develop a high level of staff digital literacy may be a hindrance to the optimization of system integration, especially since there may not be a centralized training programme to implement these points. Although it won widespread popularity in Yayasan Ar Roudhoh Jember, general use in other settings may need a bit of fine-tuning to make it usable across different types of organizations.

To sum up, the systems of information need to be systematically designed, operationalized, and evaluated to prove the usability, effectiveness, and applicability of such systems in the real-world organizational context (Haryanti et al., 2024). Hence, this application can help solve the problems of appropriate financial governance in school cooperatives. This 'artifact-driven' perspective coheres with the DSR paradigm focusing on generating novel and real organization-oriented solutions.

5. Conclusion and Suggestion

This study has come up with a development and analysis of a web-based financial application aimed at promoting accountability and transparency in cooperative management within educational institutions. The application is characterized by an integrated system that combines the recording of transactions, inventories, financial statements, and audit trails. The outcomes of the evaluation process have shown that the application has met the requirements of being technologically, financially, and accounting-feasible. Besides, it has also received positive reviews from users, where they have stated that the application possesses great usability and efficiency. Additionally, it has enhanced the efficiency of transaction recording, the reporting process, and the accessibility of the financial data. In conclusion, this application has demonstrated to be a very efficient tool for improving the financial management process at the school cooperative.

The authors acknowledge there were positive results obtained from the project, though the results are still to be taken with caution, since the study was conducted only in one school setting with two IT specialists, two accounting specialists and five users. In addition, the evaluation carried out during a relatively short period of time reflects the need for a longer period of examination to identify the application possibilities. As such, the outcomes cannot be extrapolated to additional cooperative and learning environments. The research has revealed that digital transformation performances in school cooperatives are determined not only by the technical quality of the application but also by organizational readiness, system maintenance capacity, information security governance, and the application's ability to adapt to the characteristics, needs, and competencies of the users.

6. Limitations and Future Research

While the research work has brought about positive results, there are several areas that require more development, such as interface optimization, backup and restore facility, scalability, and accounting automation. The effectiveness assessment is limited because the study used five end users from only one cooperative. The period is also short since it took two weeks, during which thirty transactions took place. This cannot be sufficient to make claims of continued decent application performance. It has also become difficult to portray the real user behavior or application performance.

The following recommendations can be provided for future research. Firstly, future research should include longitudinal analysis, along with different school cooperatives. Secondly, future studies should take into account a more comprehensive understanding of security and performance, and also more specific performance indicators. One of the performance indicators may include fewer reporting errors, transaction processing time, audit performance, and long-term use of the system. These aspects can provide stronger evidence about the system's influence on financial governance and accountability.

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