



## Financial Management Process Optimisation Using BPMN: Land Lot Trading Case at KPRI PERGU Singosari

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### Keywords:

BPMN; Financial  
Management; Cooperative

### ABSTRACT

*This study aims to model and optimise the financial management processes of the land lot trading unit at KPRI PERGU Singosari using Business Process Model and Notation (BPMN). Despite managing multiple business units, the cooperative continues to rely on manual, non-integrated financial systems, particularly in the land lot unit, which requires complex tracking of assets, payments, and reporting. Using the Rapid Application Development (RAD) approach, the study analysed the existing (As-Is) processes, identified performance gaps, and proposed an improved (To-Be) model through BPMN diagrams. The results revealed significant inefficiencies in the current workflows, including redundant data entry, delayed reporting, and a high risk of human error. The proposed BPMN models offered streamlined processes with better integration, transparency, and readiness for future digital system implementation. This research provided a practical framework for cooperatives seeking to enhance financial accountability and aligns with broader goals of digital transformation in cooperative enterprises.*

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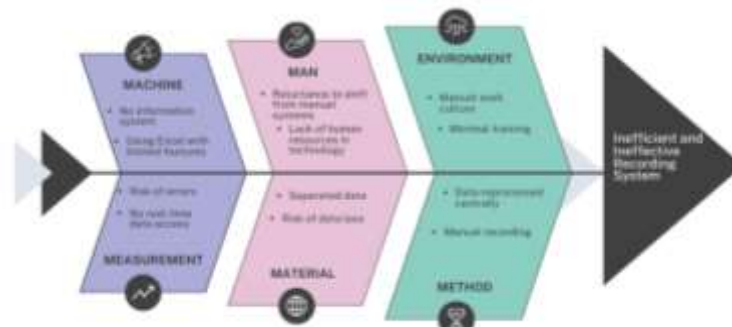
## INTRODUCTION

Cooperatives are business entities that play a crucial role in enhancing the economic well-being of communities. As stated in Law No. 25 of 1992, cooperatives aim to improve the welfare of their members in particular and society in general, while also contributing to the development of a national economy rooted in Pancasila and the 1945 Constitution. The significance of cooperatives has been recognised not only at the national level but also internationally. The United Nations (UN) acknowledges that cooperatives can foster a more inclusive and sustainable economic system (Agusalim & Karim, 2019). The values and principles embodied in cooperatives serve as the foundation for building participatory work environments that effectively address the needs of their members (Djamaludin, 2010).

The advancement of information technology through global standardisation has accelerated digital adoption in various sectors, including finance. These developments simplify accounting data processing and analysis (Popivniak, 2019). In the Society 5.0 era, cooperatives have the opportunity to adopt web-based Accounting Information Systems (AIS), enabling more flexible and efficient

financial management (Sastararuji et al., 2022). AIS supports transparent and relevant reporting for decision-making while helping anticipate risks and develop strategies (Puspitawati, 2021). Web-based applications have proven effective in improving the operational efficiency of cooperatives and MSMEs (Firdaus & Widayasastrena, 2017; Isa & Hartawan, 2017).

KPRI PERGU Singosari manages several business units to improve member welfare, including a strategic land plot trading unit. The cooperative purchases large parcels of land, divides them into smaller plots, and sells or leases them to members or third parties. This model provides income while expanding access to land ownership. A fishbone diagram outlining financial management issues in this unit is shown in Fig. 1.



*Fig. 1 Fishbone Diagram*

The fishbone diagram highlights key challenges in financial management commonly encountered by multi-purpose cooperatives, such as KPRI PERGU in Singosari. This cooperative operates several business units, including savings and loans, retail, transportation, and land plot trading, yet it continues to rely on non-integrated, legacy systems. Each unit records transactions manually using Microsoft Excel or standalone cashier applications, resulting in data fragmentation and operational inefficiencies. The land plot trading unit, in particular, requires a more advanced solution due to the complexity involved in asset tracking, maintaining transaction histories, and monitoring the ongoing status of plots. This study aims to address the absence of an integrated financial reporting system in the land plot unit at KPRI PERGU Singosari, which currently depends on inefficient, error-prone manual processes and lacks real-time reporting capabilities.

The main issues identified include limited information systems, fragmented data, and a high risk of data loss. Financial reports are manually compiled by the treasurer using basic Excel functions, resulting in inefficiencies and reduced accuracy. This fragmented system limits transparency and data-driven decision-making, reflecting broader digital transformation challenges in Indonesian cooperatives.

Many cooperatives in Indonesia still use manual bookkeeping, which causes delays, recording errors, and difficulties in synchronising data across units (Suryana et al., 2019). However, this study focuses specifically on the land plot unit, which requires an integrated system due to its complex financial reporting needs. Previous research highlights that web-based financial systems can accelerate reporting and improve efficiency, especially in asset-heavy units like property (Kosadi, 2019; Budiningrum & Subiyantoro, 2023; Upadhyay & Shrestha, 2024).

Despite the well-documented advantages of web-based AIS, the process of modelling existing financial workflows is often overlooked. Business Process Model and Notation (BPMN) has emerged as an international standard for business process modelling due to its clarity, flexibility, and ability to facilitate system integration (Cimino et al., 2025). BPMN enables organisations to visualise, analyse, and optimise business processes before implementing any system, ensuring that inefficiencies are identified early (Delgado et al., 2022). This modelling approach is especially critical for cooperatives

such as KPRI PERGU Singosari, which currently struggle with fragmented data systems, manual transaction handling, and a lack of centralised reporting mechanisms.

Innovations in accounting information systems have been proven to enhance the efficiency and accuracy of financial reporting, as demonstrated by the web-based UI/UX design for income statement reporting (Yusuf et al., 2023), the application of Business Process Management to optimize financial management (Li & Fang, 2022), and the use of ERP systems to improve inventory control in MSMEs (Wibowo et al., 2022). However, these studies have not specifically addressed financial reporting management in cooperative business units, particularly in land lot sales units, which involve distinct transactional characteristics. Moreover, the focused application of Business Process Modelling Notation (BPMN) in cooperative financial reporting remains limited. Therefore, this study aims to design a BPMN-based financial reporting system for land lot sales units in cooperatives to improve the effectiveness, accuracy, and integration of financial reporting processes.

## METHOD

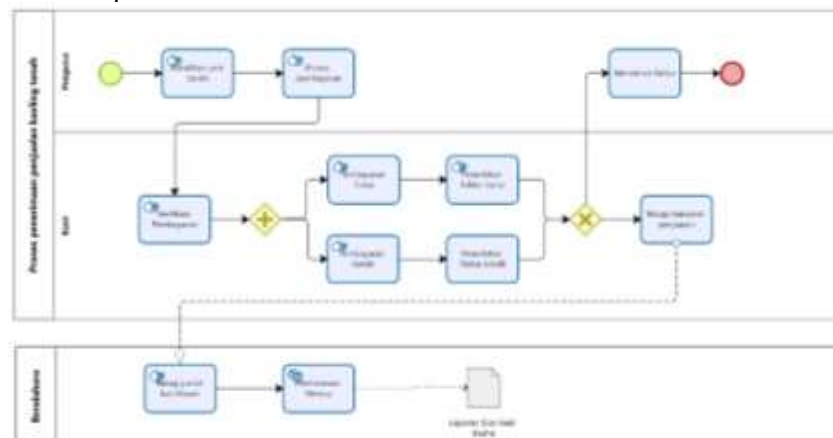
This research adopted the Rapid Application Development (RAD) methodology, which emphasises iterative progress in system development and continuous refinement through prototyping (Martin, 1991). RAD is a phased approach to software development that focuses on rapid progress and active user involvement in each stage (Murdiani & Hermawan, 2022). However, this study was limited to the early stages of development, specifically focusing on the modelling of business processes using Business Process Model and Notation (BPMN), without proceeding to full system implementation.

## RESULTS AND DISCUSSION

### Business Process Analysis (As-Is)

At this stage, an in-depth analysis is conducted on the current business processes (As-Is). The purpose of this analysis is to identify existing workflows, uncover any issues that may arise during implementation, and provide a solid foundation for designing a more effective, efficient, and integrated system. The results of the As-Is analysis will serve as the primary basis for developing the To-Be business process model that is expected to improve operational performance.

#### 1. Land Plot Sales Receipt

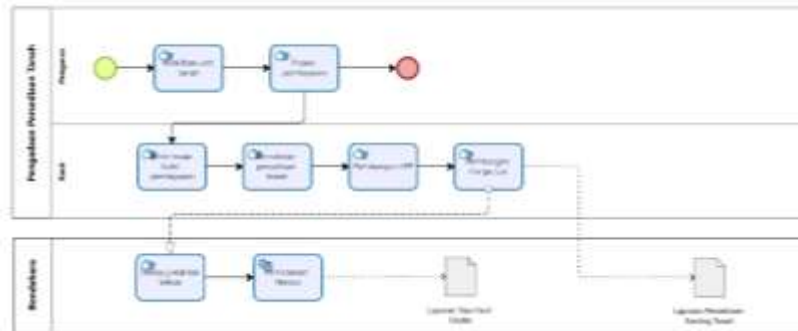


*Fig. 2 As-Is Business Process for Sales*

Fig. 2 illustrates the improved workflow for processing land lot sales within the cooperative, covering the roles of the Customer, Cashier, and Treasurer. The flow ensures systematic handling of payments, invoice issuance, transaction recaps, and financial reporting. Below is a detailed explanation of the process:

- a. The customer selects a land unit and proceeds with the payment process.
- b. The cashier verifies the payment and processes it either through cash or credit.
- c. Based on the payment method, the cashier issues the respective invoice (cash or credit).
- d. The customer receives the invoice as proof of the transaction.
- e. The cashier recapitulates the sales transactions and sends the data to the treasurer.
- f. The treasurer records the cash receipt journal and prepares the balance sheet.
- g. The financial report in the form of a Net Income Report is produced from the summarised data.

## 2. Land Inventory Procurement

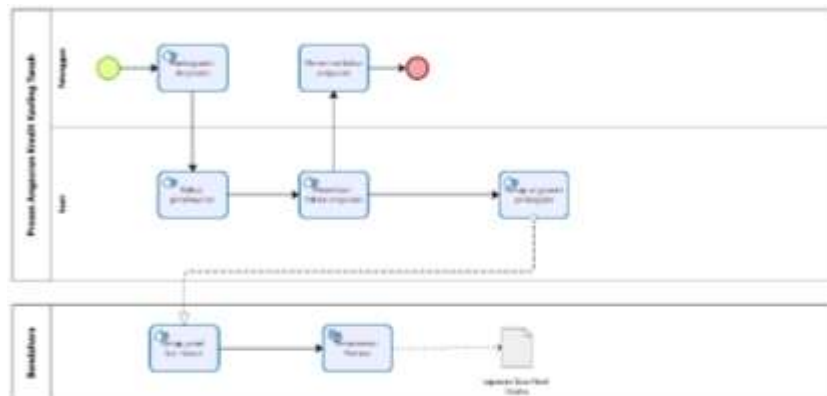


*Fig. 3 As-Is Business Process for Procurement*

Fig. 3 illustrates the current (As-Is) business process for land lot procurement at the cooperative. The flow describes how payment transactions, inventory recordings, and cost calculations are handled by the Cashier and Treasurer, starting from land unit selection by the management. This process serves as the foundation for evaluating areas that require system improvement. The explanation of the workflow is as follows:

- a. The manager selects a land unit and proceeds with the payment process.
- b. The cashier receives the payment proof from the manager.
- c. The cashier records the land inventory.
- d. The cashier calculates the cost of goods sold (COGS or HPP).
- e. The cashier then determines the selling price based on the COGS.
- f. A dotted line shows the generation of the Land Lot Inventory Report and the Net Income Report based on the selling price calculation.
- g. The treasurer records the cash outflow in the journal and processes the balance sheet.
- h. The financial reports are used for internal reporting and decision-making.

## 3. Land Plot Credit Instalment



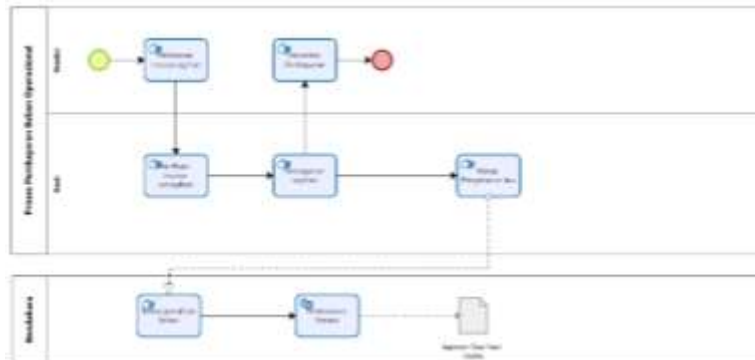
*Fig. 4 As-Is Business Process for P Land Plot Credit Instalment*

Fig. 4 represents the improved instalment payment process for land lot credit. It describes the

interaction between the Customer, Cashier, and Treasurer in handling instalment transactions, ensuring systematic recapitulation and financial reporting. The detailed flow is as follows:

- a. The customer makes an instalment payment for the land lot.
- b. The cashier records the payment recap and proceeds to issue an instalment invoice.
- c. The customer receives the instalment invoice as a formal receipt.
- d. The cashier compiles a customer's instalment recap, which becomes part of internal financial records.
- e. The compiled data is forwarded to the treasurer to record in the incoming cash journal.
- f. The treasurer processes the balance sheet using the updated financial data.
- g. The financial outcomes are reflected in the Net Income Report.

#### 4. Operational Expense Payments



*Fig. 5 As-Is Business Process for Operational Expense Payments*

Fig. 5 illustrates the improved process for paying operational expenses involving the Vendor, Cashier, and Treasurer. This process ensures transparency and proper financial documentation of operational disbursements. The flow of the process is described as follows:

- a. The vendor issues an invoice for the operational expenses to the cashier.
- b. The cashier verifies the invoice to ensure its accuracy and validity.
- c. Upon successful verification, the cashier proceeds with the payment of the invoice.
- d. The vendor confirms receipt of the payment.
- e. The cashier records the cash outflow in the cash disbursement recap.
- f. This data is forwarded to the treasurer to be logged into the outgoing cash journal.
- g. The treasurer processes the balance sheet, incorporating this expense.
- h. The financial result is presented in the Net Income Report.

#### Gap Performances

Based on observations and analysis of the land plot business unit of KPRI PERGU Singosari, several performance gaps were identified in the current methods, as summarised in Table 1.

Table 1  
Gap Performances

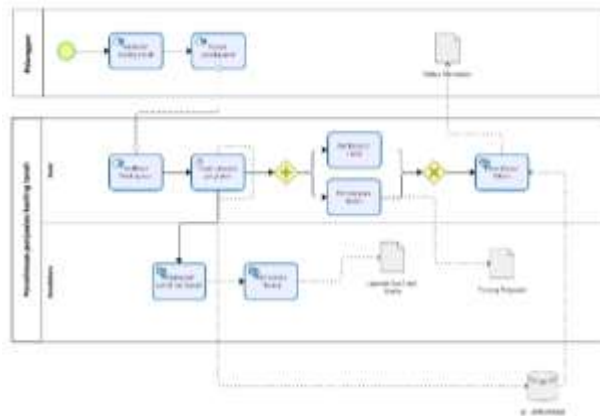
No	Business Activity	Current Conditions	Gap Performance
1	Recording land sales/purchase	Manually recorded by the cashier in Excel and separate receipts	No automatic validation; not directly linked to the financial reporting system
2	Issuance of transaction receipts	Manual issuance for each purchase/rental transaction	Receipts are not automatically stored digitally

No	Business Activity	Current Conditions	Gap Performance
3	Daily cash data recap	Recorded manually in the cash book by the cashier	Separate from the cooperative's finance system; no automation
4	Recording transactions into the journal	Manual entry by the treasurer based on cash recaps	Not real-time; prone to compilation errors
5	Preparing the ledger and financial reports	Based on the manual journal from the cashier recaps	Not automatically integrated from initial transactions
6	Tracking land plot status	Not systematically digitised	No real-time asset status information system
7	Archiving transaction documents	Manual and physical archiving	High risk of loss or damage

### Business Process Planning (To-Be)

At this stage, the design of the To-Be business process is carried out based on the results of the previous As-Is analysis. This process aims to formulate an improved workflow that addresses the identified inefficiencies and integrates various operational units within the organisation. The To-Be model represents the ideal future state of business operations, emphasising effectiveness, automation, and centralised data processing. This redesigned process will serve as the blueprint for the development of the accounting information system to support better decision-making and enhance overall performance.

#### 1. Land Plot Sales Receipt



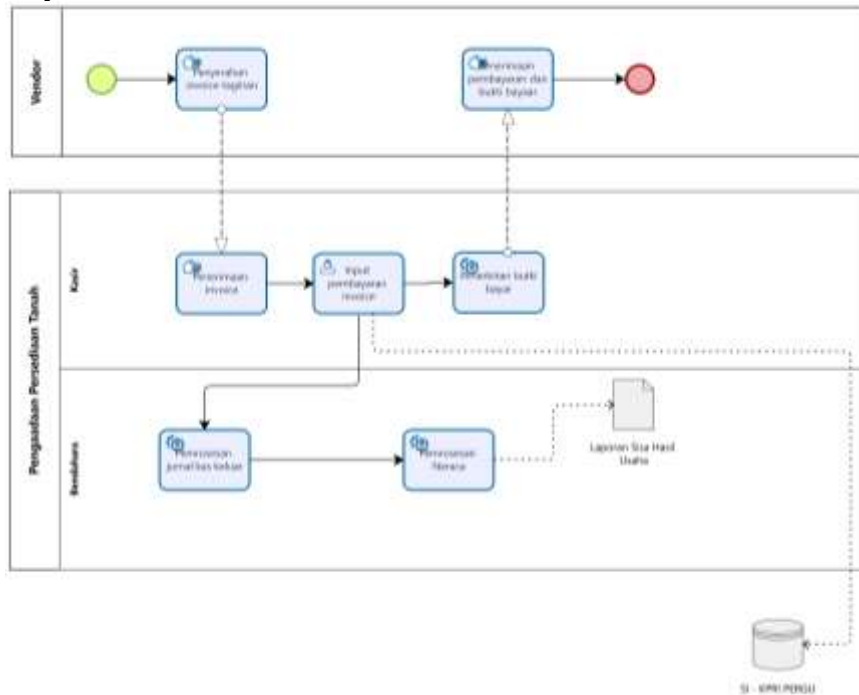
*Fig. 6 Business Process for Sales*

Fig. 6 illustrates the proposed To-Be business process for land lot sales, involving three main roles: the customer, cashier, and treasurer. The redesigned process aims to improve efficiency through centralised recording and integrated financial reporting via an information system. The process flow is as follows:

- a. The customer places an order for a land lot and proceeds with the payment process.
- b. After the payment, the system automatically generates a purchase invoice.
- c. The cashier receives the proof of payment from the customer.
- d. The cashier records the payment into the system and verifies the customer's data.
- e. A journal entry is created and subsequently verified.
- f. The process continues with the entry of the issued invoice.
- g. The sales data is then recapped in the cash-in journal and processed in the balance sheet by the treasurer.

- h. The output is reflected in the Profit-Sharing Report and the Sales Receipt.
- i. All transaction data is stored and integrated into the cooperative's central information system (SI KPRI PERGU).

## 2. Land Inventory Procurement



**Fig. 7** Business Process for Land Inventory Procurement

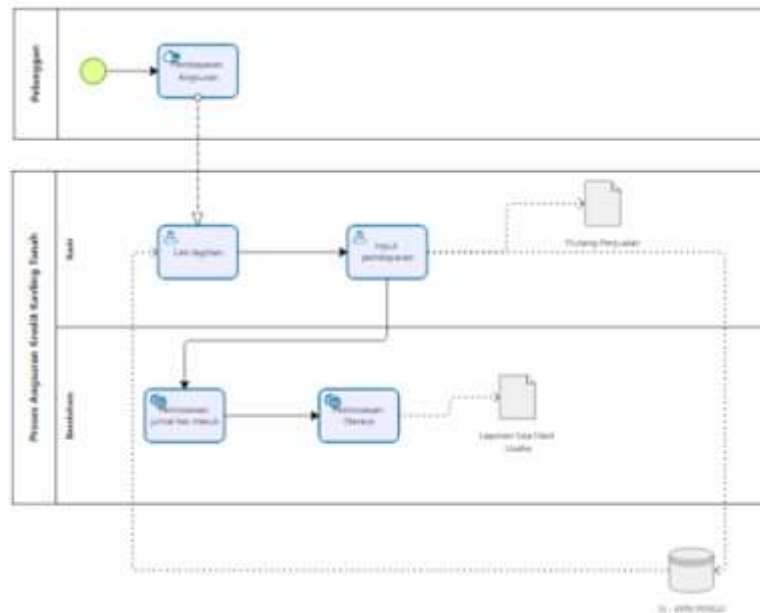
Fig. 7 illustrates the To-Be process for handling invoice payments and financial reporting in land inventory procurement. The process involves coordination between the vendor, treasurer, and finance units. The following are the simplified steps based on the BPMN flow:

- a. Vendor submits the invoice, which is then received and inputted by the treasurer.
- b. The system issues a payment receipt, and the vendor receives the payment along with proof.
- c. Finance processes the cash journal and balance sheet.
- d. Data is compiled for the Business Surplus Report and stored in the SI-KPRI PERGU system.

## 3. Land Plot Credit Instalment Process

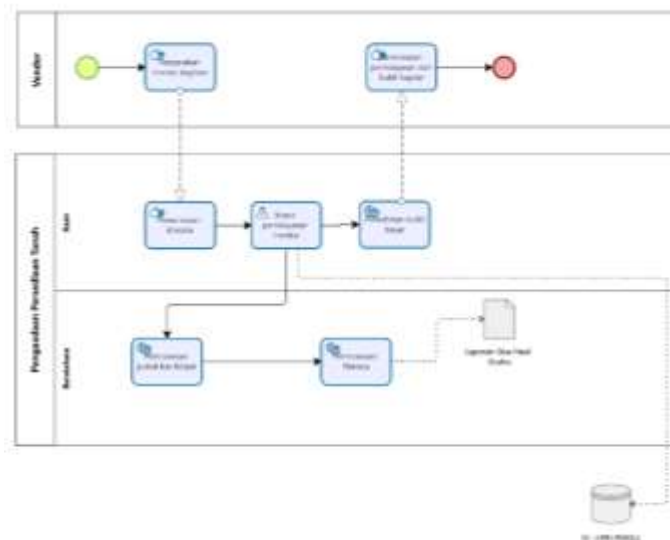
Fig. 8 presents the To-Be credit instalment process. Customers make periodic payments verified by a cashier, who inputs the data into the system. It involves coordination between the customer, treasurer, and finance units. The following are the simplified steps based on the flow:

- a. The customer makes an instalment payment, which is checked and inputted by the treasurer.
- b. Finance processes the incoming cash journal and updates the balance sheet.
- c. Data is recorded for accounts receivable and included in the Business Surplus Report.
- d. All transaction data is stored in the SI-KPRI PERGU system.



*Fig. 8 Business Process for Land Plot Credit Instalment Process*

#### 4. Operational Expense Payments



*Fig. 9 Business Process for Operational Expense Payments*

Fig. 9 details the To-Be process of operational payments. Vendors submit invoices, which are recorded by the cashier who issues payment proof. The process involves interactions between the vendor, treasurer, and finance units. The steps are as follows:

- The vendor submits an invoice, which is received and entered by the treasurer.
- The system issues a payment receipt, and the vendor receives both the payment and proof.
- Finance processes the cash outflow journal and updates the balance sheet.
- Data is compiled for the Business Surplus Report and recorded in the SI-KPRI PERGU system.

#### Optimization Strategies through BPMN Modeling

To evaluate the effectiveness of the proposed business process model using BPMN in the financial

system of the land lot unit at KPRI PERGU Singosari, a comparative analysis is conducted between the current business processes (As-Is model) and the redesigned processes (To-Be model). This comparison focuses on four key aspects of financial operations: land lot sales receipts, land inventory procurement, land plot credit instalment process, and operational expense payments. The objective of this analysis is to highlight performance gaps and demonstrate how the proposed model can optimise the overall financial workflow. The distinctions appear in Table 2.

Table 2  
Comparison As-Is Vs To-Be Models

No	Aspect	Model As Is	Model To Be
1	Land Plot Sales Receipt	<ul style="list-style-type: none"> <li>- Manual recording using Excel and physical receipts.</li> <li>- Transactions not integrated with financial reports.</li> </ul>	<ul style="list-style-type: none"> <li>- Transactions are input digitally and directly integrated with the financial system.</li> <li>- Automatic invoice generation and real-time updates to journal entries and SHU reports.</li> </ul>
2	Land Inventory Procurement	<ul style="list-style-type: none"> <li>- Procurement recorded manually.</li> <li>- HPP and inventory data are calculated separately and not linked to sales reports.</li> </ul>	<ul style="list-style-type: none"> <li>- Inventory purchase is input digitally, with automatic HPP calculation.</li> <li>- Integrated with inventory reports and financial statements (balance sheet, SHU).</li> </ul>
3	Land Plot Credit Instalment Process	<ul style="list-style-type: none"> <li>- Instalments tracked manually in separate recap files.</li> <li>- High risk of data inconsistency and delayed reporting.</li> </ul>	<ul style="list-style-type: none"> <li>- Instalment payments are input into the system and automatically reflected in the receivables ledger and SHU.</li> <li>- Transparent and accurate monitoring of customer credit status.</li> </ul>
4	Operational Expense Payments	<ul style="list-style-type: none"> <li>- Vendor invoices verified and paid manually.</li> <li>- Expense records are kept in physical archives or Excel.</li> </ul>	<ul style="list-style-type: none"> <li>- Invoices are input into the system and generate automated payment receipts.</li> <li>- Transactions are immediately recorded in the cash out journal and reflected in the balance sheet and SHU.</li> </ul>

The proposed BPMN-based business process models represent a foundational step in KPRI PERGU Singosari's digital transformation journey. By replacing manual, fragmented workflows with systematised and clearly defined digital processes, the cooperative is better positioned to adopt an integrated financial information system in the future. BPMN facilitates the visualisation and structuring of complex workflows, thereby enhancing process clarity and reducing ambiguity, which is crucial for digital transformation (Ahmad & Looy, 2020). This modelling effort aligns with broader cooperative modernisation goals, which emphasise transparency, automation, real-time data access, and enhanced accountability. Research has shown that BPMN models, when aligned with business rules, support better traceability, automation, and decision consistency across interconnected processes (Shen et al., 2024). Moreover, formalising the financial workflows through BPMN provides a scalable and modular blueprint that enables process reuse and extension to other business units (Delgado et al., 2022). In the cooperative context, the use of BPMN also supports increased accountability through standardised documentation and enables integration with future decision support systems (Choudhary, 2024). BPMN is widely recognised for its ability to bridge communication between business and technical stakeholders, reduce ambiguity in system requirements, and enable faster, more efficient system development—all of which are essential in digital transformation initiatives (Chinosi & Trombetta, 2012).

## CONCLUSIONS

This study modelled and optimised the financial management processes of the land lot trading unit at KPRI PERGU Singosari using Business Process Model and Notation (BPMN). The analysis revealed inefficiencies in the existing manual system, including fragmented data flows, delayed reporting, and a high risk of human error. The proposed BPMN-based models streamlined key processes such as sales, procurement, credit instalments, and operational expenses by enabling better integration, automation, and real-time reporting. These models laid the groundwork for the cooperative's future transition to a fully integrated financial information system. For subsequent development and service activities, it is recommended that the BPMN models be used as the basis for prototyping a web-based financial application. In addition, training sessions should be provided to cooperative staff to enhance digital literacy and ensure smooth adoption during system implementation.

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