



## Enhancing Payroll Systems for Accountability and User Experience: A Case Study at Kanindo Cooperative, Malang

Kurnia Ekasari<sup>1</sup>, Aang Afandi<sup>2</sup>, Aulia Hafiida Ade Yolandra<sup>3</sup>  
<sup>1\*,2,3</sup> Accounting Department, Politeknik Negeri Malang, Indonesia

Corresponding Author: [kurnia.ekasari@polinema.ac.id](mailto:kurnia.ekasari@polinema.ac.id)<sup>1\*</sup>

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**Abstract:** *The research aims are to evaluate and develop a payroll accounting information system for the Cooperative Agro Niaga Indonesia Syariah Malang, East Java, which functions as the research object. The analytical approach employs the Business Process Management (BPM) framework, while the system design process employs the ADDIE model. The researcher selected the BPM framework to evaluate the integration of information technology in the accounting information system process more thoroughly. Research is done in five stages. The problem analysis step comes first. At this stage, the information on company issues taken through interviews, documentation, and observational data collection. The second stage involves designing the system using the Business Process Management Notation (BPMN) model and matrix. The third step involves developing a web-based employee payroll accounting information system. The company develops this system to improve the quality of its commercial operations. The implementation stage, which includes evaluation, comes last. This study distinguishes itself by integrating the BPMN framework and ADDIE model to address the complex requirements of payroll accounting systems in a sharia-based cooperative context. Unlike prior studies, this research offers a dual-methodological approach that combines detailed business process visualization with iterative system refinement, ensuring a higher degree of standardization, automation, and user-friendliness. The application in Cooperative Agro Niaga Indonesia Syariah Malang represents a novel contribution by tailoring IT solutions to the unique needs of a rapidly growing sharia financial institution, demonstrating scalability and adaptability for similar organizations.*

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## Introduction

Technological advancements in a variety of domains have transformed the nature of communication, the workplace, and routine life. Information technology, which includes both hardware and software, is essential for the efficient processing and distribution of information in modern communication systems (C et al., 2020). Today, no communication system would be complete without it. Recent research has demonstrated that information technology (IT) enhances company operations in numerous ways, such as operational efficiency, data-driven decision-making, and increased communication (both internal and external). For example, Haefner (2023) posits that organizations can enhance their competitiveness and encourage innovation by utilizing big data analytics, which enables them to simplify procedures and analyze consumer behavior. In order to achieve success in the contemporary linked marketplaces, it is necessary to reduce human error, save time, and minimize costs. Automation can address all three of these issues. Advanced information systems provide management with real-time data, which enables them to identify patterns and make more informed strategic decisions. In the current dynamic digital market, companies must adopt these technological advancements in order to endure and thrive.

The business process of a company is a series of interconnected operations carried out to achieve the enterprise's objectives. Every firm tailors its procedures to the environment and features of the enterprise, which includes organizational growth, human resource management, and financial operations (Sudjiman, 2020). Financial administration activities are one of the company's many commercial ventures. Financial administration is one of the primary functions of the firm, demonstrating its proficiency in handling company information and papers, as well as its internal financial management. Compiling and organizing the company's finances, controlling cash flow, examining debts, assets, and payment plans, auditing the company's financial budget for specific purposes, and organizing and keeping track of important documents are all part of the financial administration process (Oulasvirta & Rönkkö, 2023). Business processes function as operational guidelines and determine the effective use of time and money, ultimately resulting in enhanced efficiency. An efficient business process facilitates faster information flow, which aids in the organization's ability to make the best decisions. The business process is made up of a number of interconnected tasks that operate in a technical and organizational setting to accomplish certain business objectives (Weske, 2012). If the business process is functioning properly, it will lead to more effective and efficient operations.

Businesses known as cooperatives are groups that were founded with the express purpose of ensuring the wellbeing of their members. Welfare services are primarily intended for the business sector. unique corporate entities created based on family, as these entities will give priority to their members. With its headquarters located in Sengkaling Malang and 12 branch offices evenly distributed throughout the towns of Malang and Batu, the Indonesian Agro Niaga Cooperative (KANINDO) Sharia Malang, East Java, is a sharia microfinance institution committed to the empowerment of Muslims. The company is expanding pretty quickly; branches are popping up around Malang City, employing 76 people

in total. The processing of employee payroll is one of the business processes that the Indonesian Agro Niaga Cooperative (Kanindo) Sharia Malang, East Java, is affected by this. Due to its essential role in the business's operations, payroll is one of the crucial procedures for its continued existence. Employees of the Agro Niaga Indonesia Cooperative (Kanindo) Sharia Malang, East Java, are still only able to submit their paycheck electronically by email or social media. Planning, directing, and assessing reporting are still done one-on-one. Thus, there is a big danger for the business. Furthermore, this company's payroll operations are actually rather complicated; all payroll-related components have been computed using Microsoft Excel, but there is always a chance that employee salaries may be entered incorrectly. Business processes strongly influence organizational efficacy and effectiveness. This research uses Business Process Model and Notation (BPMN) as the principal instrument for the analysis and improvement of business processes. BPMN offers a visual framework that elucidates complex procedures, making them understandable for both technical teams and business stakeholders (Wagiu, 2018). BPMN enables the development of refined systems that enhance efficiency and reduce redundancy by providing the capacity to model sequential process flows. Its unambiguous depiction allows businesses to delineate complete processes in a unified diagram, enhancing decision-making and communication across departments (Tsakalidis, Vergidis, Kougka, & Gounaris, 2019). The study uses BPMN to look at current processes ("As-Is") and suggest better workflows ("To-Be"). These will then be put through qualitative and quantitative tests to see how they affect the performance of the organization (Teixeira, Ferreira, & Ramos, 2024).

Payroll management is an essential component that requires efficient process modeling to guarantee organizational effectiveness and employee contentment. Huang and Lee (2020) emphasize that SMEs have achieved notable enhancements in operational efficiency and cost reduction by using technology-based payroll systems. These innovations optimize operations, minimize mistakes, and improve employee satisfaction by ensuring prompt and precise remuneration, which is vital for cultivating a productive and motivated staff.

Payroll technology is part of the human resources information system that impacts the overall productivity of an organization (Kavanagh & Johnson, 2017). This technology streamlines payroll processes, ensuring timely and accurate compensation for employees, which in turn enhances employee satisfaction and retention. Additionally, integrating payroll with other HR functions allows for better data analysis and decision-making, ultimately contributing to the organization's success. Payroll systems play a crucial role in ensuring that workers receive prompt and precise remuneration, directly contributing to sustained morale and productivity. According to Smith and Brown (2020), such systems manage the computation, documentation, and distribution of pay, particularly for salaried staff. Beyond accuracy, payroll systems also serve a strategic function by aligning company objectives with employee contentment. Efficient systems must be dependable, timely, and legally compliant, demonstrating the organization's commitment to its workforce (Jones & Taylor, 2018).

Recent innovations, like cloud-based payroll systems, have transformed payroll administration by enhancing data precision and accessibility while reducing mistakes (Smith et al., 2020). Comprehending the overarching notion of business processes is essential for contextualizing payroll systems within an organizational structure. Business processes are interrelated operations that convert resources into useful outputs for clients. According to Weske (2007), these processes delineate operational workflows inside an organization and extend to contacts with external partners, reflecting the business's strategy. Payroll procedures include three essential phases: pre-payroll, payroll, and post-payroll operations. Pre-payroll involves establishing regulations for attendance, perks, and remuneration. Payroll entails the computation of net pay subsequent to deductions. Ultimately, post-payroll guarantees precise reporting, adherence to regulatory standards, and smooth connection with financial systems. Automating these phases substantially decreases mistakes and improves operational transparency (Davenport, 1993).

Contemporary enterprises often depend on web-based technologies to enhance their operations. Websites are essential instruments for consolidating many operations, such as payroll systems, into a unified digital platform. Kadir (2008) asserts that websites use hypertext and hyperlinks to link disparate content, forming an integrated network that facilitates navigation and data retrieval. This technical advancement aids firms in efficiently handling data-intensive procedures, such as payroll. According to Yuhefizar (2012), web-based solutions are crucial for enabling the smooth dissemination of information and enhancing accessibility inside organizational structures.

To facilitate the efficient modelling of these processes, technologies such as Bizagi Modeler provide comprehensive solutions. Bizagi enables enterprises to build, evaluate, and enhance processes using BPMN standards. This application facilitates the development of intricate process diagrams and allows for the exportation of these models into several formats, including PDF, Excel, and Word, to improve cooperation and communication (Bizagi, 2017). Organizations seeking to enhance their worldwide operations acknowledge Bizagi for its capacity to replicate processes and pinpoint bottlenecks, rendering it a favoured option (Rosemann & von Brocke, 2015).

The functioning of cooperatives exemplifies a notable implementation of these ideas. Cooperatives, as articulated by Hendar (2010), are member-focused entities established to fulfil the economic, social, and cultural requirements of their constituents. In contrast to conventional corporate organizations, cooperatives emphasize member advantages rather than profit maximization. Cooperatives have been essential in promoting equitable economic development worldwide, especially in disadvantaged areas (Birchall, 2004). Their distinctive governance framework, grounded on democratic ideals, harmonizes well with the cooperative essence of technologies such as Bizagi and BPMN, which prioritize transparency and group decision-making. Numerous case studies demonstrate the actual implementation of these ideas. Annurfaida (2020) created an online payroll system for Bandung Sneaklin Shoe Laundry, markedly enhancing the efficiency of administrative operations. Laila and Santoso (2022) developed a payroll information system for the Inkopal Sabu Padang Cermin

Cooperative Unit, facilitating improved collaboration between the finance and leadership teams. A research study by Noviana et al. (2022) presented a computerized payroll system for the Mitra Sejahtera Employee Cooperative, improving accuracy and optimizing operations. These instances highlight the global trend toward digital transformation in payroll administration, underscoring the importance of utilizing modern technology to effectively address organizational challenges.

Integrating BPMN, Bizagi, and web-based solutions with payroll systems and larger business processes enables enterprises to attain substantial enhancements in efficiency and governance. These technologies and methodologies not only enhance workflows but also correspond with the primary objective of establishing sustainable, transparent, and efficient organizational procedures. Current research mostly focuses on payroll systems and process improvements in large corporations or general businesses, rather than cooperatives. There is a paucity of research about the possible use of modern process optimization techniques by cooperatives, especially in developing countries such as Indonesia, to mitigate operational inefficiencies. In addition, there is a scarcity of research that examines the specific obstacles encountered by sharia-compliant enterprises as they integrate technology while maintaining their adherence to ethical and religious principles. This research addresses the divide by focusing on a sharia-compliant cooperative and addressing its payroll administration challenges through the use of a sophisticated yet comprehensible business process modelling methodology.

This research highlights the unique contributions that set it apart from previous studies. In this research, the novelty includes, first, the integration of BPMN and ADDIE. This study integrates two rarely-used methodological approaches in payroll accounting information systems research: BPMN for business process modelling and ADDIE for system development. Secondly, it enhances the efficiency of the payroll process. The use of BPMN provides detailed visualization of complex workflows, while ADDIE allows for systematic iteration and adjustment of the system, resulting in a more standardized, time-efficient, and automated system. The third application pertains to sharia cooperatives. The study focuses on Cooperative Agro Niaga Indonesia Syariah Malang, offering a distinctive viewpoint on sharia financial management that hasn't received much attention in prior research. This research also has a practical impact on local organizations. This research provides practical solutions for community-based organizations with limited resources, highlighting the scalability and effectiveness of this approach in similar contexts.

### **Research Method**

The development of this prototype was customized to meet the cooperative's specific needs using the ADDIE framework, a structured and iterative approach often applied in instructional design and system development. According to Molenda (2003), ADDIE offers flexibility in adapting to diverse project contexts. The analysis stage identifies needs, problems, and potential improvements through literature reviews, observations, and data collection. Branch (2009) highlights that the design phase involves creating a comprehensive

prototype as a foundation for refinement, while Smith and Ragan (2019) emphasize iterative development to ensure system usability. The implementation phase applies the system in real-world scenarios, monitored for adjustments, followed by an evaluation stage where feedback is collected through discussions, observations, and questionnaires to assess the system's effectiveness and refine further.

The following stages are included in the ADDIE process: (1) Analysis. At the analysis stage, researchers identify potential problems that, if addressed, can provide added value. These activities include needs analysis, literature review, observation, identification of problems in business processes, and data collection related to supporting and inhibiting factors. The ADDIE framework has evolved into a flexible approach for various instructional design contexts, including the development of business information systems as described by Molenda (2020). (2) Design. During the design stage, researchers create a temporary initial prototype of the product. The main goal is to create a comprehensive model as a basis for further development. According to Branch (2018), the design phase in ADDIE aims to provide clear guidance in creating innovative solutions that meet the needs of the organization. (3) Development. The development phase focuses on creating energy-efficient, ergonomic, cost-effective, and user-friendly technological solutions. The researchers orient the developed system to meet modern operational needs and provide multi-faceted benefits. In the research by Smith and Ragan (2019), the development process often integrates an iterative design approach to ensure successful implementation. (5) Implementation. The researchers implement the new system in real-world conditions after testing and validating the prototype to ensure its effectiveness. This phase includes training staff, gathering user feedback, and making necessary adjustments to optimize performance and usability. Continuous monitoring and evaluation are essential during this stage to identify areas for improvement and to reinforce the system's alignment with organizational goals. (6) Evaluation. The evaluation stage involves testing the proposed business model within a limited scope. Researchers gather feedback from users through observation, discussion, and questionnaires, which allows for the evaluation of the system's effectiveness and the integration of necessary improvements.

While BPMN is an excellent tool for analyzing and optimizing business processes, especially in the complex payroll system domain (Recker, 2014), ADDIE for developing accounting information systems highlights the adaptability of iterative design (Branch, 2018). Through BPMN, companies can clarify their processes, identify bottlenecks, and streamline operations, thereby increasing efficiency and reducing costs. This approach not only improves understanding among stakeholders but also encourages improved communication and collaboration within teams. These techniques synergistically enhance each other, as BPMN offers a clear visual depiction of the process, while ADDIE ensures that the resulting solution is user-centric and responsive to evolving needs. Collectively, they add to the overall efficiency and efficacy of the company's processes.

## **Results and Discussion**

The Cooperative Agro Niaga Indonesia (KANINDO) Sharia Malang in East Java is an example of a micro-sharia financial organization that works to strengthen the Muslim economy by applying Islamic principles of justice, which is different from how traditional capitalist systems work. Established in 1998, KANINDO Sharia now operates 12 branch offices across Malang City and its surroundings, including Batu, Merjosari, and Kepanjen, with its headquarters in Sengkaling. Over time, the cooperative has experienced significant growth, evidenced by the expansion of its branches. Employing 76 individuals, this development necessitates streamlined and efficient business processes, particularly in payroll management, which directly affects daily operations.

**Current Challenges in Payroll Management.** KANINDO Sharia currently employs a payroll process that heavily relies on manual systems, involving document submission via social media and email. Payroll calculations are performed using Microsoft Excel, which, while functional, is susceptible to errors, data loss, and inefficiencies during pay slip generation. Moreover, the absence of in-house information technology expertise has posed a barrier to implementing a robust, automated payroll system. Financial constraints further deter management from investing in the development of such systems, despite recognizing their necessity. These challenges underscore the pressing need for modernization to ensure accurate and efficient payroll management, aligned with the cooperative's growth trajectory.

To address these challenges, the study proposes integrating an accounting information system (AIS) tailored for payroll management. This system introduces automation to the payroll process, enhancing efficiency, accuracy, and overall control. For instance, instead of manually generating pay slips in Excel, the new system automatically creates and disseminates them as PDF files, directly accessible by employees. Additionally, a user-friendly dashboard will centralize payroll data, enabling management to view real-time salary reports. These improvements align with principles of effectiveness and efficiency in achieving organizational goals within a defined timeframe (Al-Dmour et al., 2018; Laudon & Laudon, 2021). The illustration in figure 1 shows business process modelling at a company that aims to enhance the payroll process' quality with the aid of a payroll information system. This system not only streamlines payroll activities but also reduces the potential for errors, thereby fostering a more reliable financial environment. As a result, employees can expect timely and accurate compensation, which contributes to overall job satisfaction and productivity within the organization.

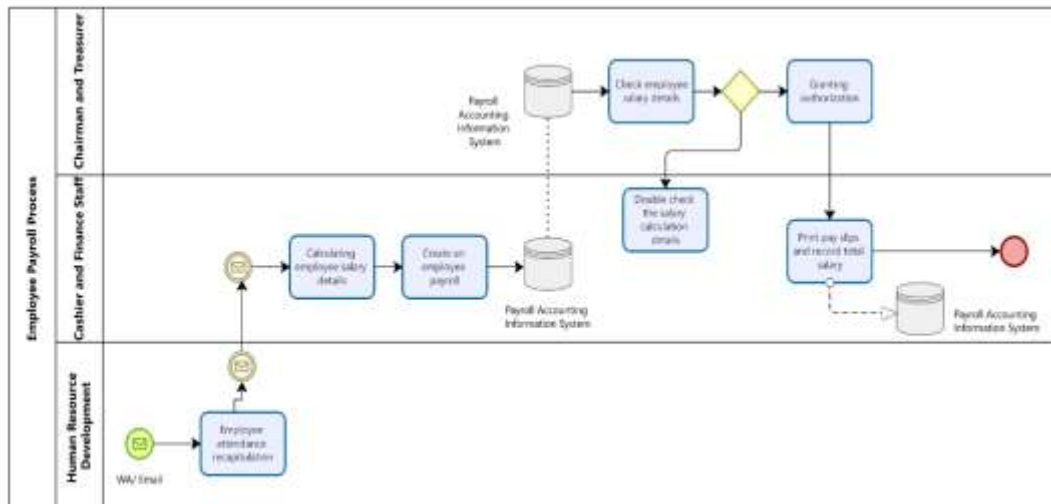


Figure 1. BPMN Design

The database-centric design facilitates the administration and access of employee records by ensuring data security and streamlining the flow of information. In addition, the incorporation of automation features deprives HR personnel of repetitive responsibilities, enabling them to focus on strategic initiatives and thereby improve organizational efficiency. This streamlined strategy not only increases the HR department's productivity, but it also fosters more employee engagement. Employees may devote more time to their principal tasks as a consequence of reduced administrative constraints, which leads to improved performance and creativity across the firm. These achievements point to more broad organizational improvements and highlight the need of using technology to improve internal controls (Xu et al., 2019). Furthermore, by adopting a sharia-compliant mindset, firms may encourage social responsibility while also ensuring that their actions adhere to ethical norms. Finally, this alignment promotes long-term viability and success by attracting like-minded employees and boosting the organization's market reputation. This excellent reputation not only attracts top talent, but it also encourages a collaborative and innovative culture among team members.

User experience (UX) is a critical component of technology adoption and administration, as it significantly impacts how employees and management interact with the system. Well-designed UX prioritizes intuitive navigation, clear workflows, and minimal cognitive load, allowing users to operate the system smoothly with limited training. Research shows that positive UX not only increases productivity but also reduces resistance to change, leading to greater user satisfaction and engagement (Garrett, 2011; Nielsen, 2020). By embedding UX principles into the proposed AIS design, organizations can create solutions that harmoniously integrate functionality and usability, bridging the gap between technical efficiency and user engagement. This approach ensures intuitive interactions, streamlines operations, and ultimately drives successful system adoption.

1. Ease of Use. The AIS incorporates an intuitive interface that simplifies payroll management, reducing errors caused by manual inputs. Employees can access their pay slips without navigating complex menus, reflecting a focus on usability (Nielsen, 1994).



2. Accessibility

The cloud-based system ensures accessibility for employees and managers across all branches, enabling real-time data synchronization. This feature directly aligns with the demands of modern work environments where remote access is increasingly vital.

3. Feedback Mechanism

The system includes a built-in feedback mechanism allowing users to report issues or suggest improvements. This design supports continuous refinement and aligns with best practices in participatory system development (Kujala, 2003).

4. Compliance with Islamic Values

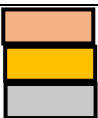
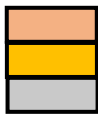

UX design also incorporates principles of Islamic values, such as transparency and justice, ensuring that users trust the system to align with sharia principles. For example, the clear display of salary components enhances employee confidence in fair treatment.

By prioritizing UX, the AIS enhances operational effectiveness while aligning with the cooperative's sharia-based values, further strengthening member trust.

The next step is evaluation using the Business Process Improvement (BPI) Framework. This study rates the effectiveness of the payroll AIS using the six BPI criteria: simplification, process cycle-time reduction, error proofing, standardization, big-picture improvement, and automation.

According to Harrington (2016), the evaluation of the proposed system uses the Business Process Improvement (BPI) framework, emphasizing process optimization to achieve measurable outcomes. The six BPI criteria used in this study—simplification, process cycle-time reduction, error proofing, standardization, big-picture improvement, and automation—are used to rate how well the payroll AIS works. The following table displays the findings from the questionnaires and interviews:

Table 1. Synthesis of Interview and Questionnaire Results

No	Evaluation Measurement Criteria	% Statement	Answer Keywords
1.	Simplification	 : 80% : 20% : 0 %	“easy to use”; “reduces cycle processes”
2.	Process cycle-time reduction	 : 80% : 20% : 0 %	“real time”; “can save time”; “faster”
3.	Error proofing	 : 100% : 0% : 0 %	“reduce human error”; “safe database”; “relatively safe”



Source: Processed Data (2024)

Information:



The interview results underscore substantial enhancements stemming from the development and execution of the payroll system. The technology efficiently optimizes payroll-related business processes by removing extraneous procedures, which enhances operations for 80% of participants. However, some individuals remained resistant due to their familiarity with the conventional Excel-based approach.

A significant advantage is the decrease in payroll cycle duration. The majority of participants recognized that the system conserves around three hours every cycle by automating computations and report preparation. Nonetheless, several users exhibited reluctance to completely abandon manual approaches.

The new technology has markedly reduced inaccuracies in data processing and storage. The shift from manual documentation to a cloud-based digital system has improved data accuracy and security, in accordance with sharia principles of trust and openness. All respondents expressed universal approval of this enhancement, which has mitigated risks and strengthened trust in payroll procedures. However, some individuals raised concerns about the learning curve associated with the new system, fearing it may lead to temporary disruptions in workflow. We suggested comprehensive training sessions and ongoing support to address these apprehensions, ensuring a smooth transition and fostering confidence among all users.

The installation has facilitated standardization, guaranteeing uniform quality in payroll activities. All participants acknowledged the advantages of standardized data entry and processing protocols, which have enhanced operational supervision. This uniformity has enhanced the system's stability and fortified overall governance. Governance structures are now better equipped to respond to discrepancies and ensure compliance with regulatory standards. As a result, organizations can maintain a higher level of accountability, ultimately fostering a culture of integrity and transparency within the workplace.

In addition to immediate operational benefits, the technology has enabled broader organizational enhancements. Although the majority of respondents acknowledged substantial improvements in procedures, a minority raised concerns about difficulties throughout the implementation phase, underscoring the need for ongoing assessment and modification to attain sustained success. Success in adopting such technologies hinges on continuous training and support for staff, allowing them to adapt to new systems effectively. By investing in these areas, organizations can not only mitigate potential challenges but also enhance overall productivity and employee satisfaction.

The complete automation of payroll administration has proven revolutionary. The implementation of real-time updates and the removal of human interventions have improved operational autonomy and dependability. Participants collectively recognized this as a crucial element in enhancing efficiency and facilitating a more streamlined and reliable payroll system. This shift toward automation has also fostered a culture of continuous improvement, where feedback loops enable ongoing refinement of processes. As a result, employees can focus on more strategic tasks, driving innovation and growth within the organization.

The findings of this study align with research (Ahmad & Hassan, 2019) suggesting that incorporating sharia principles into financial technology can enhance user trust. The use of modern technology, such as web-based payroll, can help sharia cooperatives compete globally while still adhering to ethical and religious values (Haefner, 2023). By implementing a sharia-based payroll system in Indonesia, it can be a model for other developing countries facing similar challenges (Shirazi & Latham, 2021). This research addresses a critical gap in operational management for sharia cooperatives, emphasizing the integration of Islamic financial principles with modern technology. This integration not only enhances the efficiency of cooperative operations but also ensures compliance with ethical standards outlined in Islamic finance. By leveraging digital tools, sharia cooperatives can improve transparency, streamline processes, and ultimately better serve their communities.

The study contributes to the discourse on how Islamic cooperatives can leverage digital transformation to improve efficiency while maintaining ethical and religious principles. This approach encourages the development of innovative financial products that align with Islamic values, attracting a broader audience. Furthermore, it highlights the importance of education and training in technology use, ensuring that cooperative members are well-equipped to navigate this evolving landscape. The inclusion of UX considerations in designing AIS introduces a unique perspective often overlooked in traditional Islamic finance studies. The research also provides practical implications for other Islamic cooperatives seeking to modernize their operations without compromising their core values, thereby setting a precedent for combining sharia compliance and technological innovation.

## **Conclusion**

This study sought to improve the business operations of the Indonesian Agro Niaga Cooperative (KANINDO) Sharia Malang via the creation of an online payroll accounting information system. The existing manual payroll processes, dependent on email, social media,

and Microsoft Excel, provide risks of inaccuracies, inefficiencies, and delays, adversely affecting operational efficiency and employee satisfaction. The research employed a web-based payroll system that utilizes Business Process Modeling Notation (BPMN) to improve processes and boost accuracy and efficiency.

The design approach included user-friendly interfaces, prototypes, and iterative testing, culminating in a system that integrates smoothly into operations while improving data integrity, security, and transparency. Post-implementation assessments verified that the system successfully resolved the issues associated with manual procedures, fulfilling organizational requirements.

Future studies could explore the use of usability testing to gauge staff happiness and adoption rates, in addition to conducting longitudinal studies to examine the system's long-term impacts on growth, contentment, and trust. Furthermore, examining the system's scalability for other cooperative tasks, such as member contributions or loan management, and doing cross-industry comparisons within sharia-compliant firms might provide significant insights for wider applications and optimal practices.

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