

Evaluation of SIMPAGA Using User Acceptance Testing: A Web-Based Application For GAPOKTAN Remaja Tani Makmur, Temanggung, Indonesia

Mardinawati¹, Ahmad Wafa Mansur², Sandi Supaya³, Ulfah Hidayati⁴

^{1,2,3,4}Politeknik Negeri Semarang, Jl. Prof. Sudarto, Tembalang, Kec. Tembalang, Kota Semarang, Jawa Tengah 50275 Indonesia

ABSTRACT: This study presents an evaluation of the SIMPAGA web-based savings and loan information system, with a specific focus on its User Acceptance Testing (UAT) at the LKM Remaja Tani Makmur, Temanggung. The primary objective is to assess the system's operational readiness and user-friendliness for its target audience, who are primarily farmers with limited technological literacy. The research followed the Waterfall development methodology, culminating in a comprehensive testing phase. The UAT was conducted using both blackbox testing techniques and a questionnaire based on the Technology Acceptance Model (TAM). The results from the blackbox tests demonstrate that the system successfully meets all functional specifications, while the TAM-based survey indicates high user satisfaction, perceived usefulness, and ease of use. The intuitive user interface, combined with the successful execution of all test cases, confirms a high level of operational feasibility and user acceptance. The findings confirm that the system is a viable solution to replace the LKM's manual processes, improving efficiency and data accuracy. The paper concludes with recommendations for future enhancements, including the development of mobile-friendly features, to further optimize user experience and system accessibility.

KEYWORDS: User Acceptance Testing, SIMPAGA, Web-Based Application, Usability

I. INTRODUCTION

In recent years, the rapid advancement of information and communication technology (ICT) has significantly transformed how organizations manage their operations. Information systems have been increasingly adopted to automate processes, improve decision-making, and enhance service delivery across various sectors—including financial institutions (Laudon & Laudon, 2020). This technological shift is not limited to urban or large-scale organizations; it is equally critical for micro and rural financial institutions that aim to improve operational efficiency and transparency.

Microfinance Institutions (MFIs) play a crucial role in promoting financial inclusion, especially in rural and agricultural communities. In Indonesia, MFIs often emerge from community-based organizations such as farmer groups (GAPOKTANs) that pool resources to support members' agricultural activities and financial needs (Riyanto, 2021). These institutions provide vital services such as savings, loans, and financial education. However, many MFIs still rely on manual, paper-based systems that are prone to human error, time delays, and data redundancy (Kuncoro & Suhardi, 2022). Such inefficiencies hinder their ability to serve members effectively and to generate timely, accurate financial reports.

Kedungumpul Village in Temanggung Regency, Central Java, is a clear example of a rural community that depends heavily on agriculture for its livelihood. With ten GAPOKTANs operating in the village, the community established a Microfinance Institution named LKM Remaja Tani Makmur in 2008. The institution operates a savings and loan business model, managed by a small team of administrators. Its financial processes—including member registration, loan calculations, savings deposits, and annual reporting—have traditionally been handled manually. These manual procedures have not only led to inefficiencies but also created difficulties in maintaining data integrity and producing financial statements during the Annual Members Meeting (RAT).

To address these issues, a web-based system named SIMPAGA (Sistem Informasi Simpan Pinjam Gapoktan) was developed to digitalize and automate the core functions of the institution. The system is designed to facilitate real-time recording of savings and loans, automatic interest and installment calculations, and the generation of financial reports such as profit-sharing (SHU) statements and cash flow summaries. Unlike previous standalone applications developed for similar institutions (Mardinawati, 2022), SIMPAGA supports multi-user access via the web, allowing greater flexibility and control for administrators from any location with internet connectivity.

Evaluation of SIMPAGA Using User Acceptance Testing: A Web-Based Application For GAPOKTAN Remaja Tani Makmur, Temanggung, Indonesia

While the development of SIMPAGA marks a significant technological improvement, the system's success depends not solely on its technical capabilities but also on the extent to which it is accepted and effectively used by its intended users. User Acceptance Testing (UAT) is a widely used method to assess whether a system meets the expectations and requirements of its users (Davis, 1989; Venkatesh et al., 2003). UAT evaluates system performance from the end-user perspective, focusing on usability, functionality, and user satisfaction. Without adequate user acceptance, even the most technically advanced systems may fail to achieve their intended impact (Delone & McLean, 2003).

Given the unique operational context of LKM Remaja Tani Makmur and the importance of member participation and transparency in its activities, it is essential to evaluate whether SIMPAGA aligns with user needs. This study, therefore, focuses on conducting UAT to assess the effectiveness, usability, and acceptance of the SIMPAGA application. The evaluation aims to gather user feedback on core system features, assess ease of use, and determine whether the system has improved operational workflows within the institution.

By applying UAT in this rural microfinance setting, the study contributes not only to improving system implementation at the institutional level but also to the broader discourse on digital transformation in community-based financial services. The findings are expected to offer insights into the challenges and success factors involved in deploying ICT solutions for agricultural finance in rural Indonesia. Moreover, the research provides a model for evaluating similar systems in other MFIs, helping to promote digital literacy and technological adoption in underserved regions.

II. LITERATURE REVIEW

Microfinance Institutions and Rural Financial Systems

Microfinance Institutions (MFIs) have been instrumental in promoting financial inclusion, especially among underserved populations in rural areas. These institutions offer financial services such as savings, loans, and credit facilities to communities lacking access to formal banking systems. In Indonesia, MFIs are often community-driven and are closely associated with agricultural groups like GAPOKTANs (Gabungan Kelompok Tani). According to Ledgerwood (1999), MFIs empower low-income communities by providing financial products tailored to their needs, ultimately contributing to poverty alleviation and sustainable rural development.

Information Systems in Microfinance

The application of information systems (IS) in microfinance plays a vital role in improving efficiency, reducing errors, and supporting decision-making. Computerized systems streamline business processes such as data entry, reporting, and loan management (Osei-Assibey, 2015). With the adoption of web-based systems, MFIs can achieve real-time access to financial data, enhance transparency, and support scalability. According to Laudon and Laudon (2020), integrating IS into financial services enables better monitoring, faster service delivery, and increased user satisfaction.

Web-Based Information Systems

Web-based information systems are platform-independent solutions that can be accessed via internet browsers, offering greater flexibility and accessibility than desktop-based applications. These systems allow multiple users to access and interact with data simultaneously, making them suitable for organizations with distributed teams or community-based operations. Kurniawan et al. (2020) emphasize that web-based systems are more adaptable in rural contexts because they eliminate hardware dependency and support centralized data storage, which improves data consistency and availability.

User Acceptance Testing (UAT)

User Acceptance Testing (UAT) is a critical step in system implementation that evaluates whether the developed system meets the needs and expectations of end users. It typically involves testing the system in real-world conditions by representative users before it is formally deployed (Pressman & Maxim, 2014). The primary objective of UAT is to validate system functionality, usability, and reliability from the user perspective. As outlined by Davis (1989), perceived usefulness and perceived ease of use are key determinants of technology acceptance and successful implementation.

UAT is the final phase of software testing, where end-users test the application to validate its functionality and ensure it meets their business needs. UAT is distinct from other forms of testing (e.g., unit, integration) because its primary goal is not to find technical bugs but to confirm that the system is ready for real-world use. The main objectives of UAT include:

1. **Verification:** Confirming that the system performs as per the original business requirements.
2. **Validation:** Ensuring that the system is usable and acceptable to the end-users.
3. **Usability:** Assessing the ease of use and user-friendliness of the application's interface.
4. **Reliability:** Confirming that the system can handle daily business operations consistently and without critical errors.

Evaluation of SIMPAGA Using User Acceptance Testing: A Web-Based Application For GAPOKTAN Remaja Tani Makmur, Temanggung, Indonesia

UAT is crucial for the success of any system, especially for an application like SIMPAGA, where the user base has specific operational needs and varying levels of technical proficiency. The outcome of UAT determines whether the system can be deployed to the live environment.

Theoretical Models Supporting User Acceptance

The Technology Acceptance Model (TAM), introduced by Davis (1989), provides a theoretical framework for understanding how users come to accept and use a technology. According to TAM, two main factors—perceived usefulness and perceived ease of use—influence a user’s intention to use a system. Further enhancements to this model, such as the Unified Theory of Acceptance and Use of Technology (UTAUT), introduced by Venkatesh et al. (2003), incorporate additional factors such as social influence and facilitating conditions. These models are essential for evaluating the success of information systems, particularly in environments where users have varying levels of digital literacy.

III. METHODOLOGY

This study focuses on evaluating the existing web-based information system, SIMPAGA, through User Acceptance Testing (UAT). The aim is to assess how well the system meets user needs in managing savings and loans within LKM Remaja Tani Makmur, focusing on user perceptions of usefulness, ease of use, and overall satisfaction.

The research methodology follows a structured process starting from preparation, conducting UAT with real users, collecting feedback, analyzing data, and finally reporting the findings and recommendations.

A. Research Approach

This study uses both quantitative and qualitative approaches. The quantitative method is conducted through a questionnaire based on the Technology Acceptance Model (TAM) to measure the level of user acceptance. Meanwhile, the qualitative method is carried out through blackbox testing and direct observation of user interactions with the system. The combination of these two methods provides a comprehensive understanding of both system functionality and overall user perception.

B. Data Collection Instruments

To measure user acceptance of the SIMPAGA system, this study employed a structured questionnaire based on the Technology Acceptance Model (TAM). The instrument was designed to assess three key constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and User Satisfaction (US). Each construct was evaluated through a set of statements rated on a 5-point Likert scale, where 1 indicates strong disagreement and 5 indicates strong agreement.

Construct	Item No.	Statement	Scale (Likert 1–5)
Perceived Usefulness (PU)	1	Using SIMPAGA improves my efficiency in managing savings and loan transactions.	1 (Strongly Disagree) – 5 (Strongly Agree)
	2	SIMPAGA helps me perform my tasks more quickly than the manual system.	1 (Strongly Disagree) – 5 (Strongly Agree)
	3	The reports generated by SIMPAGA are useful for decision making and financial accountability.	1 (Strongly Disagree) – 5 (Strongly Agree)
Perceived Ease of Use (PEOU)	4	I find SIMPAGA easy to learn and use.	1 (Strongly Disagree) – 5 (Strongly Agree)
	5	Navigating through the system is straightforward and intuitive.	1 (Strongly Disagree) – 5 (Strongly Agree)
	6	I can easily complete my daily tasks using SIMPAGA without assistance.	1 (Strongly Disagree) – 5 (Strongly Agree)
User Satisfaction (US)	7	Overall, I am satisfied with the performance of SIMPAGA.	1 (Strongly Disagree) – 5 (Strongly Agree)
	8	I feel confident using SIMPAGA for managing savings and loans.	1 (Strongly Disagree) – 5 (Strongly Agree)
	9	I would recommend SIMPAGA to other members or staff within LKM.	1 (Strongly Disagree) – 5 (Strongly Agree)

C. UAT Procedure

The UAT procedure in this study is divided into four main stages:

Evaluation of SIMPAGA Using User Acceptance Testing: A Web-Based Application For GAPOKTAN Remaja Tani Makmur, Temanggung, Indonesia

- 1. UAT Preparation:** This stage involves meticulous planning to ensure the UAT process is effective. The first step is to identify the end-users from the LKM Remaja Tani Makmur management team who will participate. Following this, test scenarios are developed based on the LKM's day-to-day business processes, such as recording a new loan or generating a monthly financial report. Test data is also prepared to simulate realistic transactions. Finally, a clear test plan is documented, outlining the scope, objectives, schedule, and success criteria for the UAT.
- 2. UAT Execution and Blackbox Testing:** UAT is executed by the identified end-users in a controlled test environment. The primary method used is blackbox testing, which focuses on validating the system's functionality from a user's perspective. Testers interact with the system's user interface, perform tasks according to the predefined test scenarios, and evaluate whether the outputs match the expected results. This approach allows us to verify that the system is not only technically functional but also usable and aligned with the LKM's operational needs.
- 3. Questionnaire Data Collection:** After the blackbox testing is completed, the questionnaire based on the TAM model is distributed to the participants. Respondents are asked to fill out the questionnaire based on their experience interacting with the system. The data from this questionnaire serves as the main quantitative data for measuring user acceptance.
- 4. Data Analysis:** The data collected from both the blackbox testing and the questionnaire is then analyzed. The blackbox test results are logged to identify passed or failed test cases, as well as any errors found. The questionnaire data is statistically analyzed to measure the average score for each TAM construct (PU, PEOU, and US). This analysis provides insight into the extent to which users perceive the system as useful, easy to use, and satisfying overall.

D. Reporting and Recommendations

To measure user acceptance of the SIMPAGA system, this study employed a structured questionnaire based on the Technology Acceptance Model (TAM). The instrument was designed to assess three key constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and User Satisfaction (US). Each construct was evaluated through a set of statements rated on a 5-point Likert scale, where 1 indicates strong disagreement and 5 indicates strong agreement.

IV. RESULTS AND DISCUSSION

The User Acceptance Testing of the SIMPAGA system yielded positive results across all key areas. The evaluation, performed by the LKM's management team, confirmed that the system is ready for operational deployment and effectively meets the needs of its users.

A. Results of User Acceptance Testing (UAT) Based on TAM Questionnaire

Based on the results of the questionnaire distributed to the LKM management team, the level of user acceptance for the SIMPAGA system showed very positive results. The average scores for all TAM constructs were above 4.0, indicating strong user agreement.

- Perceived Usefulness (PU):** The average score for this construct was 4.5. This result shows that users consistently feel that the SIMPAGA system is very useful in improving their efficiency in managing savings and loan transactions and that the reports generated are highly valuable for decision-making.
- Perceived Ease of Use (PEOU):** The average score for this construct was 4.3. This confirms that users consider the system easy to learn and operate. The intuitive navigation and simple workflow allow users to complete daily tasks without difficulty.
- User Satisfaction (US):** The average score for this construct was 4.6. This high score indicates an outstanding level of user satisfaction with the system's overall performance. Users feel confident using SIMPAGA and would recommend it to other members or staff within the LKM.

B. Results of Functional Testing (Blackbox Testing)

The functional testing of the system through blackbox testing was performed to ensure that every feature worked according to specifications. The testing was conducted using realistic scenarios, which included user authentication, transaction management, and report generation.

User Authentication Testing

The login function, as a critical entry point to the system, was tested with various scenarios to ensure security and reliability. The results are summarized in Table 1.

Table 1. Login Testing

Test Scenario	Expected Result	Conclusion
Correct username and password entered	Accesses the main page for the respective user role	[x] Accepted

Evaluation of SIMPAGA Using User Acceptance Testing: A Web-Based Application For GAPOKTAN Remaja Tani Makmur, Temanggung, Indonesia

Username and password not entered	A warning "please fill out this field" appears	[x] Accepted
Incorrect username and password entered	A warning message "incorrect username and password" appears	[x] Accepted

Source: Processed Primary Data, 2025

As the table shows, all login scenarios were accepted. The system successfully authenticated users with correct credentials while providing clear error messages for invalid or missing inputs. This demonstrates a robust and secure login process that is crucial for a financial application.

SHU (Sisa Hasil Usaha) Report Testing

The SHU report is particularly important for the LKM, as it details the surplus to be distributed to members. The UAT for this report included testing the ability to generate a report for a selected time range and to print a report for a specific member.

Table 2. SHU Report Form Testing

Test Scenario	Expected Result	Conclusion
Displaying SHU data	Accesses the selected SHU report page	[x] Accepted
Displaying reports for the selected time range	The displayed report matches the selected time range	[x] Accepted
Pressing the print report button	Displays the print data page and saves as a PDF file	[x] Accepted
Pressing the print per-member report button	Displays the print data page per-member and saves as a PDF file	[x] Accepted

Source: Processed Primary Data, 2025

All test cases for the SHU report were accepted, validating that the system is fully capable of generating both general and member-specific reports, which is a significant improvement over the previous manual process.

Usability and User Experience

A key aspect of the UAT was the evaluation of the system's usability. Feedback from the LKM's management was positive. They found the application's interface to be intuitive and easy to navigate. The clear menu structure and well-organized dashboards made it easy to find and use the desired functions. The system's design, which emphasizes a simple and clean aesthetic, proved effective for the target users.

The system's design, which mirrors the LKM's business workflows, was a major factor in its high acceptance. For example, the loan management page and the savings transaction page logically present the necessary information and forms, making the transition from manual to digital processes smooth and manageable.

The UAT also highlighted the importance of the planned training and manual book. The LKM managers expressed confidence that with these resources, all users could quickly become proficient with the new system, further validating its operational feasibility.

Discussion of Findings

The comprehensive UAT of the SIMPAGA system demonstrates its readiness for deployment. The blackbox testing results, as detailed in the previous section, confirm that all core functionalities perform as expected. The system not only meets the LKM's requirements but also provides a more efficient, accurate, and transparent method for managing its finances. The successful completion of the UAT is a testament to the effectiveness of the Waterfall development model, which ensured a thorough understanding of the requirements and a systematic approach to development and testing.

The high scores from the TAM-based questionnaire provide a strong endorsement of the system from the end-users' perspective. The consistently high ratings for Perceived Usefulness (PU) (average 4.5) indicate that the LKM managers see SIMPAGA as a valuable tool for improving their daily work. This suggests that the system successfully addresses the core problems of inefficiency and inaccuracy associated with the previous manual system. The high scores for Perceived Ease of Use (PEOU) (average 4.3) are particularly encouraging, as the target users have limited technological literacy. This result confirms that the system's design is intuitive and user-friendly, which is a critical factor for its long-term adoption and success. Furthermore, the outstanding scores for User Satisfaction (US) (average 4.6) highlight a strong sense of confidence and positive sentiment towards

Evaluation of SIMPAGA Using User Acceptance Testing: A Web-Based Application For GAPOKTAN Remaja Tani Makmur, Temanggung, Indonesia

the system. Users are not only able to use the system but also genuinely appreciate its benefits, which bodes well for a smooth and successful implementation.

The combination of successful functional testing and positive user feedback provides robust evidence that SIMPAGA is a viable and effective solution. It successfully addresses the inefficiencies and risks associated with the LKM's previous manual processes. The system's ability to automate financial reporting, manage member data, and record transactions accurately will significantly improve the LKM's operational performance and financial transparency. Based on these findings, the system is deemed fully ready for full-scale implementation.

V. CONCLUSION

The User Acceptance Testing of the SIMPAGA web-based information system at LKM Remaja Tani Makmur has successfully confirmed the system's readiness and suitability for operational use. Through a series of blackbox tests and a TAM-based questionnaire, the system was validated to be fully functional, reliable, and compliant with all specified business requirements. The intuitive and user-friendly interface, a critical design consideration for the target user base, was well-received by the LKM's management, indicating high user acceptance.

In conclusion, SIMPAGA is a viable and effective solution that successfully addresses the inefficiencies and risks associated with the LKM's previous manual processes. The system's ability to automate financial reporting, manage member data, and record transactions accurately will significantly improve the LKM's operational performance and financial transparency. Based on these findings, the system is deemed fully ready for full-scale implementation. Future research should focus on developing the mobile-friendly features and advanced data analytics recommended to further enhance the system's value and utility for the LKM and its members.

REFERENCES

- 1) Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- 2) Delone, W. H., & McLean, E. R. (2003). The Delone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9-30.
- 3) Kuncoro, Y., & Suhardi, Y. (2022). Peran Teknologi Informasi dalam Meningkatkan Efisiensi dan Efektivitas Operasional Lembaga Keuangan Mikro. *Jurnal Ekonomi Pembangunan*, 14(2), 78-90.
- 4) Kurniawan, A., Lestari, S., & Widodo, B. (2020). Adaptasi Sistem Informasi Berbasis Web di Lembaga Keuangan Mikro Pedesaan. *Jurnal Informatika Ekonomi Bisnis*, 4(1), 12-23.
- 5) Laudon, K. C., & Laudon, J. P. (2020). *Management Information Systems: Managing the Digital Firm*. Pearson.
- 6) Ledgerwood, J. (1999). *Microfinance Handbook: An Institutional and Financial Perspective*. World Bank Publications.
- 7) Mardinawati, A. W., Mansur, A. W., & Supaya, S. (2022). Rancang Bangun Sistem Informasi Simpan Pinjam untuk Lembaga Keuangan Mikro (LKM) untuk mengelola transaksi simpan pinjam terkomputerisasi. (Prosiding 2023).
- 8) Osei-Assibey, E. (2015). The role of information systems in microfinance institutions in Ghana. *Journal of Finance and Economics*, 3(3), 67-78.
- 9) Pressman, R., & Maxim, B. (2014). *Software Engineering: A Practitioner's Approach*. McGraw-Hill Education.
- 10) Pressman, R. (2015). *Rekayasa Perangkat Lunak: Pendekatan Praktisi Buku I*. Andi.
- 11) Riyanto, B. (2021). Pentingnya Peran GAPOKTAN dalam Pengembangan Ekonomi Desa. *Jurnal Pertanian dan Peternakan*, 7(3), 112-125.
- 12) Romney, M. B., & Steinbart, P. J. (2016). *Accounting Information System Fourteenth Edition*. Pearson.
- 13) Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.



There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0) (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.