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Building Sustainable Communities: SIMARET Development for Financial Transparency with MDALC Approach

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Abstract: The increasing need for financial transparency and efficiency in community-level governance, particularly within Rukun Tetangga (RT) in Indonesia, calls for innovative solutions. This study presents the development of SIMARET, a mobile application designed to enhance the management of RT financial activities and resident participation, using the Mobile Application Development Life Cycle (MDALC) approach. The research aims to address the challenges of manual financial management, such as lack of transparency and difficulties in tracking funds and activities like neighborhood watch (Siskamling). SIMARET incorporates key features such as digital tracking of resident contributions (jimpitan), QR code-based attendance for Siskamling, and automated financial reports. The system was developed through MDALC's structured phases: identification, design, development, testing, and deployment. Blackbox Testing and User Acceptance Testing (UAT) were conducted to ensure functionality and user satisfaction. The results show a high satisfaction rate of 97%, confirming that SIMARET simplifies financial administration and enhances community participation. The study also highlights the application's contribution to the United Nations Sustainable Development Goals (SDG) 16 by promoting transparency and effective governance at the local level. Although SIMARET demonstrates significant potential, further research is recommended to improve its user interface design and expand its implementation in other communities.

Keywords: SIMARET; Financial Transparency; MADLC, Community Engagement, Sustainable Development Goals (SDGs)

INTRODUCTION

"Rukun Tetangga" (RT) or Neighborhood Association, as the smallest unit in the governmental structure of Indonesia, plays a crucial role in managing and serving the community at the grassroots level (Fitriana & Nouvel, 2023). One of the critical aspects is the financial management of the RT, which includes resident contributions, the RT's funds, and revenue from security activities such as jimpitan (voluntary contributions). However, financial management at the RT level is often still conducted manually and traditionally, leading to various issues such as a lack of transparency, inefficiency, and difficulties in record-keeping and reporting (Yustrinita & Aprilia, 2021) The inability to monitor cash flow in real-time and transparently often results in misunderstandings and a lack of resident participation in essential activities, including night patrols (Ronda).

Based on the results of observations and interviews in an RT with a large population, such as RT 09 RW 05, Karanglewas Lor Village, Banyumas, Central Java, Indonesia, financial management issues become increasingly complex. With more than 110 households (KK), the manual system is often inefficient in monitoring cash inflows and outflows, recording mandatory contributions, and tracking residents' jimpitan (voluntary contributions). Another problem is the difficulty in tracking the attendance of residents participating in night patrols and managing the patrol fund. All these processes still rely on paper-based systems, which are prone to errors and time-consuming. Technology-based solutions are urgently necessary with the increasing complexity of financial and administrative management at the Neighborhood Association (RT) level, especially in this digital era. The lack of transparency in financial management, inefficient manual record-keeping, and low resident participation in community activities are the primary issues that must be addressed promptly.

Previous studies have developed digital solutions to improve Neighborhood Association (RT) management to facilitate the management of resident data, contributions, and other activities. For example, Nababan & Natashia (2022) developed the RT Service and Management Information System (SIPP RT) based on the Depth First Search

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method to simplify record-keeping, previously done manually. In addition, Hidayat & Santoso (2022) developed an administrative application for RT 02 RW 09 Pancoranmas, Depok, although no explicit method was described. However, this application focuses on digital document storage rather than physical records. Rahmadi et al., (2022) also designed a dashboard for managing RT contributions, but it still used manual input methods, often leading to inefficiencies and human error. Furthermore, Mayasa Kurnia & Abdul Rohman, (2023) developed a web-based RT Information System (SIRT) using the Waterfall method, but resident engagement was still limited as the focus was on communication with the RT head, who often struggled with managing time and administrative tasks. Suryanto & Maliki, (2022) implemented Rapid Application Development (RAD) for a resident information system, but manual data input remained a major issue that frequently led to human errors. Kurniadi et al., (2022) and Arohman et al., (2022) also developed web-based systems to record RT residents, but they found that human errors during input often affected the accuracy of stored data. Research by Fujianto & Nurahman, (2022) and Halijah & Arnomo, (2023) showed that web-based portal systems have been applied for online RT services in some residential areas. Still, these systems have not fully resolved transparency issues, particularly regarding "jimpitan" (voluntary contributions). Setiadi et al., (2022) also developed a web-based system for residents, but once again, the limitation lay in manual input, which was prone to errors. Research by Lee & Isputrawan, (2022) through the LINGKOE application using the Mobile Application Development Life Cycle (MADLC) approach, also indicated that the provided features have not fully optimized public services. From the various studies conducted, it is evident that the majority of the systems developed are still web-based and use traditional methods such as Waterfall or RAD, which have not been able to integrate important features such as QR code-based night patrol attendance, automatic jimpitan recording, and real-time notifications to residents. These limitations highlight the need for a more comprehensive and mobile-based solution that efficiently manages the administration and enhances resident participation and transparency in RT financial management.

To address these challenges, this study aims to develop the SIMARET (RT Management System) mobile application, specifically designed to facilitate the management of finances and neighborhood watch (sickling) activities at the RT level. The application will have features for recording contributions and jimpitan (voluntary contributions), night patrol attendance using QR codes, and automatic notifications to residents regarding financial and jimpitan updates. The development of this application employs the Mobile Application Development Life Cycle (MDALC), a structured application development method that consists of seven stages: identification, design, development, prototyping, testing, deployment, and maintenance (Ibrahim et al., 2022). Functionality testing will be conducted using black-box testing to achieve comprehensive research results. This type of testing ensures that the software functions as expected based on its specifications and requirements (Amadi et al., 2022). Additionally, to measure user satisfaction, User Acceptance Testing (UAT) will be applied (Nouman et al., 2023).

This study makes a tangible contribution to community sustainability by applying technology that supports SDG 16, which focuses on building transparent, accountable, and inclusive institutions. Through SIMARET, it is hoped that active resident participation will increase, trust in community financial management will be maintained, and better and more sustainable community governance will be achieved.

LITERATURE REVIEW

Manual financial management in Neighborhood Association (RT) activities significantly impacts transparency and accountability. Traditional manual methods often lack the precision and systematic standardization required for accurate financial reporting, leading to potential discrepancies and mismanagement of funds. This situation can foster distrust among community members, who may feel unclear about how funds are allocated and spent. According to Papadeas, the quality of accounting information is crucial for decision-making and resource allocation, which is directly related to the transparency of financial operations in community organizations such as RTs (Papadeas, 2023). Additionally, the inherent subjectivity in manual accounting practices can lead to biased financial reporting, thus undermining the accountability of the RT leader (Holong Parulian, 2022).

In contrast, implementing a digital financial management system can significantly improve transparency and trust within the RT community. Digital systems facilitate real-time tracking and reporting of financial transactions, which can be accessed by all stakeholders, fostering an open economic environment. For instance, the use of digital platforms enables standardized reporting practices in line with best practices in financial accountability, as evidenced by studies on the impact of digitalization on financial management (Farida & Aryanto, 2023; Mi, 2024).

The Mobile Application Development Life Cycle (MADLC) is a structured framework that guides the development of mobile applications through a series of distinct phases. This life cycle is essential due to the unique challenges and complexities associated with mobile app development, which differ significantly from traditional software development processes. The MADLC typically consists of seven key stages: Identification, Design, Development, Prototyping, Testing, Deployment, and Maintenance (Muzayyana Agustin et al., 2024). One of the key strengths of the Mobile Application Development Life Cycle (MADLC) is its capacity to address the unique challenges of mobile platforms, such as varying screen sizes, diverse operating systems, and different user interaction patterns. This flexibility is crucial for ensuring that applications perform efficiently across a wide range of devices and environments (Lim & Chin, 2023). Furthermore, MADLC emphasizes usability testing at multiple

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phases of development, allowing for the early detection and resolution of potential issues, which helps to minimize the need for costly revisions after deployment (Akmal Muhamat et al., 2021).

The SIMARET application, designed to improve financial management at the neighbourhood level, plays a crucial role in advancing the Sustainable Development Goals (SDGs), particularly SDG 16, which emphasizes the importance of transparent, accountable, and inclusive institutions. By utilizing digital tools, SIMARET can facilitate greater transparency in financial transactions, fostering trust and accountability within the community. One of the key ways SIMARET contributes to SDG 16 is by promoting transparency. Transparency is defined as the accessibility of information, which is critical for accountability in governance and financial management (Mayernik, 2017). Aplikasi ini memungkinkan pemerintah daerah dan organisasi masyarakat untuk berbagi data keuangan secara terbuka, sehingga warga dapat memantau bagaimana dana dialokasikan dan dibelanjakan. Hal ini sejalan dengan temuan yang menggarisbawahi pentingnya transparansi dalam implementasi kebijakan sektor publik, yang meningkatkan akuntabilitas dan menumbuhkan kepercayaan antara warga negara dan pemerintah mereka ("Transparency and Policy Implementation in the Public Sector in Singapore," 2023). This application allows local governments and community organizations to openly share financial data, enabling residents to monitor how funds are allocated and spent. This aligns with findings that highlight the importance of transparency in public policy implementation, which enhances accountability and fosters trust between citizens and their governments (Banerjee et al., 2020).

METHOD

Research Approach

This study adopts the Mobile Application Development Life Cycle (MDALC) approach as the framework for developing the SIMARET application. Several researchers have utilized the MADLC in their studies, highlighting its effectiveness in various contexts. For instance, Agustin integrated the MADLC into the development of a mobile application prototype, emphasizing its structured approach to mobile application design (Muzayyana Agustin et al., 2024). Mokhsin applied the MADLC to create a mobile rental equipment application, demonstrating its utility in organizing the development process (Mudiana Mokhsin et al., 2023). Similarly, Wambua proposed a security-aware variant of the MADLC, incorporating security considerations into each phase to enhance application safety (Wambua Wambua, 2023). Other studies, such as those by Hafidhoh and Nugraheni, also adopted the MADLC framework to develop educational applications, showcasing its adaptability to different application types and user needs(Hafidhoh et al., 2023; Nugraheni et al., 2023). In summary, the MADLC is a comprehensive framework that facilitates the systematic development of mobile applications through its well-defined phases. Its application in various research contexts underscores its relevance and effectiveness in addressing the complexities of mobile application development.

Research Flow Diagram

This research consists of six stages: problem identification, literature review, development of the SIMARET application, functional testing, user acceptance testing, and conclusion with the analysis of research results. Fig 1 illustrates the research flowchart to facilitate understanding of the overall flow of the SIMARET application development.

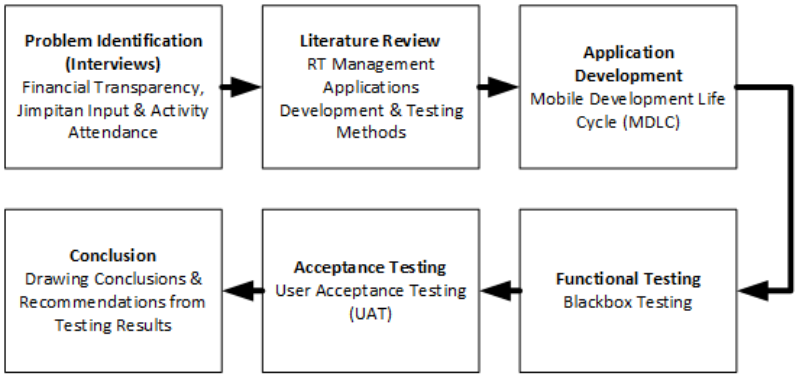

Fig. 1 Research Flow Diagram

SIMARET Application Development Stages Using MDALC

Identification

In this stage, a comprehensive needs analysis was conducted using multiple approaches, including interviews and observations with RT administrators and residents of RT 09 RW 05 in Karanglewas Lor Village. These interactions highlighted key issues such as challenges in financial management and low participation in night patrol activities. Specifically, problems identified included the manual recording of "jimpitan" (voluntary contributions),

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difficulties in tracking RT funds, and minimal resident involvement in neighbourhood watch programs. To address these issues, a system requirements analysis was conducted, resulting in the identification of several essential features for the SIMARET application. First, the Digital Contribution Recording feature automates the tracking and recording of "jimpitan," replacing manual processes and enhancing transparency through real-time financial updates. Additionally, the Financial Monitoring Dashboard provides RT administrators with a clear, comprehensive view of financial activities, enabling efficient management of funds by presenting detailed records of income, expenses, and balances. Another key feature, the QR Code-based Patrol Attendance, ensures accurate tracking of night patrol participation by using QR codes, improving transparency with verifiable attendance records accessible to both administrators and residents. Lastly, the system includes Automatic Notifications and Alerts, which streamline communication by sending timely updates to residents regarding contributions, patrol schedules, and changes in financial matters. Together, these features align with the overarching goal of enhancing transparency and efficiency in financial management. Figure 2 presents the Use Case Diagram showing the interaction between users (RT administrators, residents) and the application features.

Fig. 2 Use Case Diagram of User Interaction (RT Administrators, Residents) and Application Features

Design

This stage involves designing the user interface (UI) and system structure based on the identified requirements. The design process considers the following: User Interface (UI) Prototype: The login page, dashboard, jimpitan feature, and night patrol attendance screens are designed to enhance user interaction and ease of use. Data Mapping: The necessary data structures, including resident data, RT funds, and patrol schedules, are organized and designed using an Entity Relationship Diagram (ERD). Fig 3. presents the data flow diagram of the SIMARET system, illustrating how information moves within the system.

Development

At the development stage, the focus is on building the key functionalities of the SIMARET application based on the system design. This stage involves coding the core features such as the QR code-based patrol attendance, jimpitan (voluntary contribution) recording, and RT fund monitoring. The application is developed using Visual

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Studio for Android, with programming languages like Java and Kotlin. To ensure smooth data flow within the system, a Data Flow Diagram (DFD) (as illustrated in Figure 3) was created. The diagram shows how data moves between the different modules, such as the contribution records, patrol attendance logs, and financial records. The diagram highlights the interactions between RT administrators, residents, and the system's features, such as data input and the generation of real-time reports. Additionally, table designs were formulated to store and manage critical data, including resident information, contribution records, and patrol attendance. These tables are structured to optimize the storage and retrieval of data, ensuring the system's performance and accuracy. Each table is designed to handle large volumes of data while maintaining data integrity and supporting features like automatic notifications, contribution tracking, and attendance verification. This stage also includes integrating messaging applications, such as WhatsApp, to automate notifications regarding jimpitan contributions and patrol schedules, enhancing communication efficiency among residents.

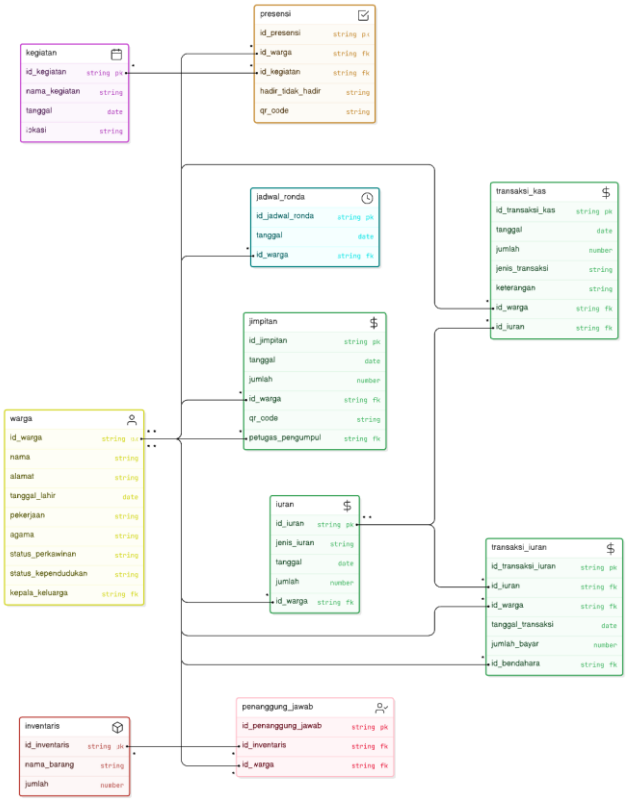

Fig 3. The SIMARET system's data flow diagram

Prototyping

At this stage, the RT administrators gradually test the SIMARET application prototype, with a few selected residents serving as early users. User Feedback: The prototype is tested across various mobile devices, and users provide valuable feedback to improve the application's interface and functionality. Iterative Improvements: Based on this feedback, continuous enhancements are made to the application before it is prepared for further testing phases.

Testing

Testing was conducted to ensure that the SIMARET application functions properly and meets user needs. Various testing methods, including black box testing, were applied to verify that each application feature worked correctly according to the designed specifications. In addition to Blackbox testing, User Acceptance Testing (UAT) was also conducted. According to Lambardo & Wawan, (2022). The respondents' application testing analysis results can be evaluated by comparing the obtained score with the maximum score, as shown in formula (1).

$$P = \frac{f}{N} x100\% \quad (1)$$

Explanation:
P = Percentage score sought
f = Score obtained by the validator
N = Maximum score

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The UAT testing instrument used was adopted from research by Wahyudi et al., (2023) It was divided into three sections of questionnaire testing aimed at assessing the application's acceptance from the perspectives of design, service, and efficiency of the SIMARET application. The questionnaire included 18 questions using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Deployment

After completing the testing phase, the SIMARET application was successfully implemented for RT 09 RW 05 residents, Karanglewas Lor Village. The application was distributed in an easy-to-use installation format for Android devices, allowing residents to download and install it quickly via an APK file. A brief training session was conducted for RT administrators and residents to ensure smooth adoption. During this session, users were guided on efficiently utilizing the application's key features, including recording jimpitan contributions, logging night patrol attendance, and monitoring RT funds. This training helped ensure that residents were well-equipped to use the app for improved community financial management and participation.

Maintenance

This stage involves maintaining the SIMARET application to ensure it performs optimally after its implementation. Regular data backups are carried out for financial records and resident attendance logs to prevent potential data loss. Additionally, periodic updates incorporate new features or enhancements into the application based on user feedback. These updates help ensure the system remains relevant and responsive to the community's evolving needs, providing all users with a seamless and efficient experience.

RESULT

The SIMARET application has been developed to address various challenges in financial management at the RT (Neighborhood Association) level, with the primary goal of enhancing transparency and efficiency to align with the goals of SDG 16, which emphasizes the importance of building transparent, accountable, and inclusive institutions. To achieve these objectives, several key features have been developed, including Digital Contribution Recording (Jimpitan). This system automates the recording and tracking of voluntary contributions made by residents, known as jimpitan. Previously, these records were kept manually, often leading to inaccuracies and a lack of transparency in management. With SIMARET, every contribution is expected to be recorded in real-time, allowing both RT administrators and residents to easily view financial transactions clearly and in detail, thereby significantly improving transparency. Second, the Financial Monitoring Dashboard is designed to provide a comprehensive view for RT administrators regarding RT finances, including records of income, expenses, and remaining balances. The detailed financial reports generated can be accessed by both administrators and residents, allowing for more efficient financial management, reducing errors, speeding up processes, and strengthening trust among residents. Third, the QR Code-Based Night Patrol Attendance ensures that attendance records for night patrol activities are accurately kept. With this QR-code system, both RT administrators and residents can easily verify attendance, thereby improving transparency and efficiency in residents' participation in neighborhood security activities. Fourth, Automatic Notifications are sent to residents automatically regarding RT meeting schedules, communal work activities, jimpitan updates, night patrol schedules, and RT financial updates. By automating this communication, SIMARET saves time and ensures that all stakeholders are always up-to-date with the latest information in a timely manner.

The development of the SIMARET application directly supports the achievement of SDG 16 by creating a transparent and accountable RT financial management system while also increasing resident participation in community activities. The digitalization of financial records, attendance tracking, and automated notifications makes information more accessible and verifiable, thereby promoting greater transparency and increasing trust between residents and RT administrators. This is in line with SDG 16's focus on inclusive and participatory governance. Additionally, the automatic generation of financial reports enables RT administrators to maintain accountability in managing funds. The QR Code-based attendance feature also enhances resident participation in night patrols, indirectly supporting SDG 16's goals of encouraging community involvement and shared responsibility in maintaining neighborhood security. The integration of these various features is expected to make SIMARET more advanced compared to similar applications previously developed, as it does not merely focus on data management or resident contributions but combines essential features such as financial recording, night patrol attendance tracking, and jimpitan tracking via QR Code into one comprehensive system. Thus, SIMARET is expected to improve efficiency in RT administrative management and create a more transparent and accountable institution that is accessible to all residents, thereby supporting better and more inclusive governance at the RT level. The next stage involves testing the SIMARET application using both Blackbox testing and UAT methods.

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Testing Results

Blackbox Testing

All features of the SIMARET application functioned as expected, confirming the system's ability to perform effectively. Table 1 shows the results of black box testing, indicating that all key functionalities, including login, jimpitan contributions, and attendance tracking, were validated.

Table 1. Blackbox Testing Results

Feature	Input	Output	Results
Login	Input user and Password	Display home page	Valid
Resident data menu	Input resident data	Resident data is saved to the database	Valid
Jimpitan menu	Input jimpitan data with QR code scan	Jimpitan data is saved to the jimpitan database	Valid
Patrol attendance menu	Input patrol attendance with QR code	Attendance data is saved to the attendance database	Valid
Activity attendance menu	Input activity attendance with QR code	Activity attendance data is saved to the activity database	Valid
Contribution/Fund menu	Input resident contribution data	Contribution data is saved to the fund database	Valid
Meeting minutes menu	Input meeting minutes data	Meeting minutes data is saved to the minutes database	Valid
Inventory menu	Input RT inventory data	Inventory data is saved to the inventory database	Valid

The Blackbox testing results show that all features function well and have no significant issues. The system screenshots (Figure 4) illustrate the Financial Monitoring Dashboard, Jimpitan Contribution Records, and QR Code-based Attendance System. Each of these features was designed to enhance transparency and efficiency, aligning with the system's development objectives. The dashboard provides real-time updates on RT finances, while the contribution records and QR-based attendance ensure accuracy and accountability in both financial transactions and resident participation.

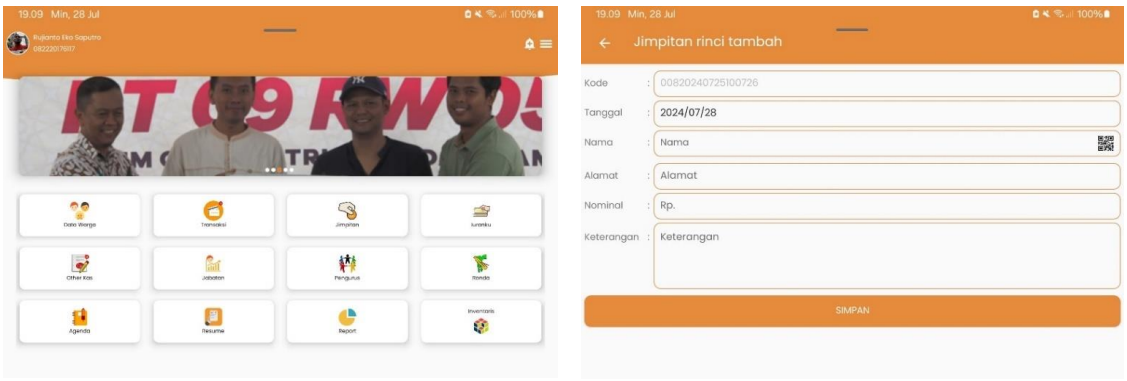

Fig 4. Dasboard and “Jimpitan” Menus

User Acceptance Testing (UAT)

A simple random sampling method was employed, with a total sample of 67 out of 80 permanent residents in the RT 09/05 area. The sample size was determined using the Slovin table with a 5% margin of error (Tripena, 2024). The questionnaire was distributed to residents through Google Forms. After the questionnaire data was collected, the next step was data processing based on the selected scores for each instrument. Table 2 shows the total responses for each score option.

Table 2. Number of Responses for Each Score

No	Statement	Score				
		1	2	3	4	5
Design Aspect						
1	The design of SIMARET is attractive	3	22	23	18	1
2	The SIMARET menu is easy to understand	0	0	12	31	24
3	The color of the text and background is appropriate	0	6	6	31	24
4	The SIMARET application is appealing	0	0	0	32	35

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5	The font used is easy to read	0	0	0	38	29
Service Aspect						
6	The services in SIMARET are easy to understand	0	0	0	15	52
7	SIMARET makes it easier for residents to input jimpitan	0	0	0	11	56
8	SIMARET simplifies attendance for patrols and activities	0	0	0	11	56
9	SIMARET makes it easier to search for resident data	0	0	0	10	57
10	SIMARET simplifies the recapitulation of jimpitan and funds	0	0	0	10	57
11	SIMARET simplifies searching for inventory items	0	0	0	12	55
12	SIMARET simplifies monitoring cash in/out of RT funds	0	0	0	11	56
Efficiency Aspect						
13	SIMARET is the right solution for RT management	0	0	0	10	57
14	SIMARET is effective for RT management	0	0	0	11	56
15	SIMARET meets the needs of residents	0	0	0	12	55
16	SIMARET is more efficient compared to other applications	0	0	0	11	56
17	SIMARET is efficient for RT administrators	0	0	0	11	56
18	SIMARET is efficient for residents	0	0	0	11	56

After calculating the total score for each response and multiplying it by the corresponding weight value, the next step is to sum the total scores. The total score is then divided by the total number of respondents to obtain the average score (mean). Once the average score is obtained, the percentage (P) can be calculated using the formula (1). Table 3 presents the results of the User Acceptance Testing (UAT).

Table 3. UAT Testing Results

Aspect	Maximum Score	Actual Score	Percentage (%)
Design	335	270	80,6%
Service	335	325	97%
Efficiency	335	325	97%

The design aspect achieved a percentage score of 80.6%, which is considered good. However, this score is lower compared to the service and efficiency aspects, indicating that improvements are needed in the design to enhance both the user interface (UI) and user experience (UX) for increased user satisfaction. Enhancing the UI/UX will positively impact user engagement and satisfaction with the system. On the service aspect, an average percentage of 97% was achieved based on the 7 statement instruments provided regarding the SIMARET application. This demonstrates that SIMARET has effectively facilitated RT management, providing users with a reliable and user-friendly service. In terms of efficiency, SIMARET scored an average of 97% for its effectiveness, accuracy, and ease of use. These high scores indicate that the application successfully improves work quality and efficiency, handles complex tasks effectively, and reduces the workload for RT administrators.

Application Implementation and User Feedback

The SIMARET application was implemented in RT 09 RW 05, and residents were given access to it through their Android devices. After several weeks of use, users provided positive feedback regarding the ease of financial recording, night patrol attendance tracking, and the jimpitan notification feature, which helped residents monitor their contributions more effectively. Following the implementation, data on jimpitan contributions and RT funds recorded in the SIMARET application were analyzed. The results indicated that using SIMARET improved the accuracy and transparency in jimpitan recording and RT fund management. Figure 5 illustrates an example of the jimpitan data recap and RT fund management summary.

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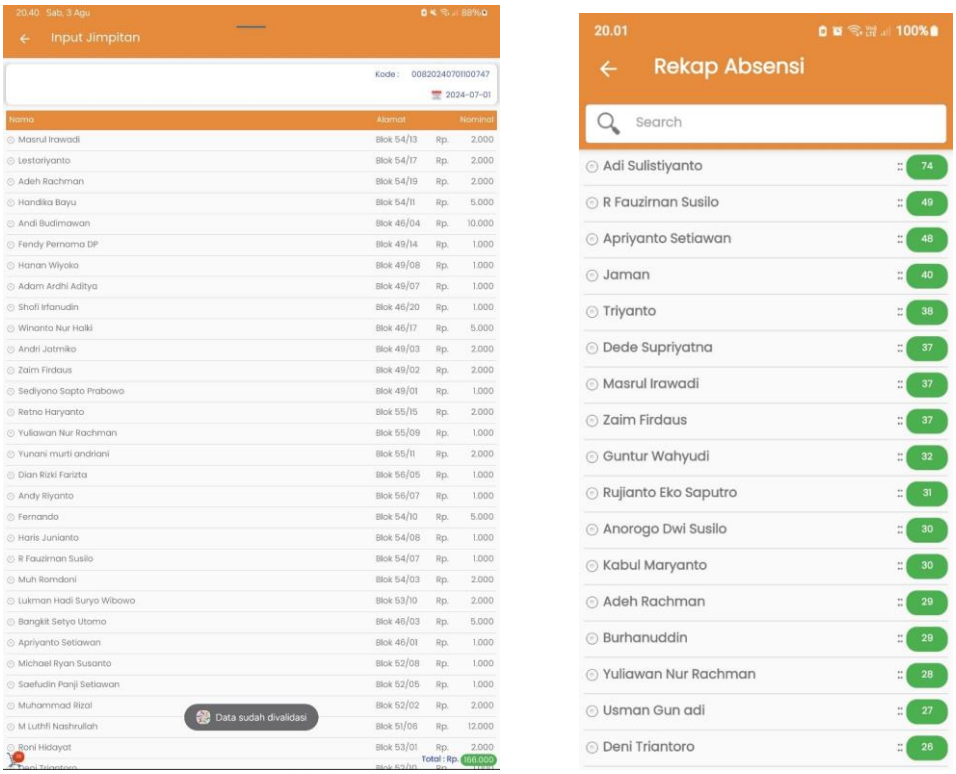

Fig 5. Example of 1-Day Jimpitan Results (Left) and Night Patrol (Ronda) Attendance Recap (Right)

The results of this study demonstrate that the SIMARET application was successfully implemented, with valid testing outcomes and high user satisfaction. These findings suggest that the application improves transparency and efficiency in RT financial management.

DISCUSSIONS

The study's results show that SIMARET has successfully addressed transparency and efficiency issues in RT financial management and has made significant contributions to simplifying administration and increasing resident participation, thereby building a transparent and accountable institution.

SIMARET's Effectiveness in Enhancing Transparency and Efficiency

The implementation of the Digital Contribution Recording feature and the Financial Monitoring Dashboard has significantly improved transparency and reduced manual errors, which is in line with the main objectives of this study. The ability for residents to monitor financial transactions in real time gives them greater control over their contributions while also strengthening the trust between RT administrators and residents. This transparency is key to creating a more efficient governance system, which was previously difficult to achieve with manual systems. High scores in the service and efficiency aspects from UAT results indicate that SIMARET effectively reduces the workload of RT administrators while improving the accuracy of financial management.

Support for SDG 16: Building Transparent and Accountable Institutions

The digitalization of financial records, attendance tracking, and automatic notifications through SIMARET is closely aligned with the goals of SDG 16, which emphasizes transparency and accountability. Residents' ability to monitor finances and attendance in real-time demonstrates the creation of a more transparent and accountable governance system at the RT level. Compared to manual paper-based methods, SIMARET significantly reduces the risk of errors or misuse, ensuring that financial records are open for community review.

The QR Code-based attendance system has also been shown to increase resident participation, especially in night patrol activities, as it allows residents to verify their attendance instantly. This verifiable record system enhances accountability, which is another key element of SDG 16. Automatic notifications play an important role in ensuring that residents are always up-to-date on financial and security activities. Compared to similar applications developed previously, SIMARET stands out due to its more comprehensive integration of features, such as financial recording, night patrol attendance tracking, and QR Code-based jimpitan tracking. Most previous RT applications offered limited features, such as basic cash management or resident data handling, without

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integrating attendance or jimpitan tracking. In contrast, SIMARET combines various essential features into one system, making it more effective in supporting the overall management of RT activities.

Challenges and Limitations

Although SIMARET has demonstrated significant success, some areas still need attention. The User Interface (UI) received a lower satisfaction score (80.6%), indicating that improvements are needed to make the system more intuitive and user-friendly, especially for users less familiar with digital applications. Enhancing the UI will positively impact the overall user experience, which is expected to increase engagement and satisfaction. Additionally, long-term maintenance strategies and data backup plans need to be established to ensure that the system continues to function optimally and remains relevant as the RT's needs evolve. As the number of users increases, issues related to system scalability and sustainability will become increasingly important to support a larger user base and more extensive features.

CONCLUSION

The development and implementation of the SIMARET application have successfully addressed key challenges in RT financial management, particularly in terms of transparency and efficiency. Features such as Digital Contribution Recording, Financial Monitoring Dashboard, QR Code-based Night Patrol Attendance, and Automatic Notifications have proven to provide significant solutions to the previous manual issues. With this system, administrative processes have become simpler, errors have decreased, and real-time access to financial data is available to residents in a transparent manner. This has contributed to increased trust between RT administrators and residents. The high user satisfaction score in UAT, reaching 97% for service and efficiency aspects, confirms that SIMARET effectively meets the administrative needs of the RT. However, during implementation, some challenges persisted. One of the main obstacles was the residents' adaptation to new technology, especially for those who were not familiar with digital applications. Although the application was designed to simplify processes, some residents expressed concerns about the user interface, which they found not intuitive enough. Certain features, such as data search or the color scheme and fonts, were rated as less user-friendly by certain groups. This is reflected in the lower satisfaction score for the design aspect (80.6%), indicating that user experience (UX) needs to be improved, particularly to ensure all groups can use the application without difficulty. Feedback from users also provided valuable insights. Most users reported that the application made it much easier for them to keep track of RT financial developments, but they also suggested several improvements. For instance, there were suggestions to add more detailed reporting features or to allow access to financial information not only through the app but also via other communication channels like WhatsApp. This feedback is valuable and will serve as a guide for further development. Going forward, the focus of SIMARET's development will include enhancing the user interface to be more accessible to all user groups, especially for those less familiar with digital applications. Additionally, long-term management related to system updates and scalability will be prioritized to ensure the application continues to evolve and meet the needs of a wider community. Overall, SIMARET has proven to be an effective tool in promoting transparency and efficiency in RT financial management, aligning with the Sustainable Development Goal (SDG) 16. With ongoing improvements and enhancements based on user feedback, this application has great potential for broader adoption by other RTs across Indonesia

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