Enhancing mosque governance through mobile-based system: a case study at Baitussyarif Muhammadiyah Jambi

Saleh Yaakub [1,3 *], Wawan Joko Pranoto [2,3], Taghfirul Azhima Yoga Siswa [2,3], Ika Safitri Windiarti [3], Rida Priyanti [1], Alghazali [1]

[1] Universitas Muhammadiyah Jambi, 36129, Indonesia
[2] Universitas Muhammadiyah Kalimantan Timur (UMKT), 75124, Indonesia
[3] Universiti Muhammadiyah Malaysia (UMAM), 02100, Malaysia

[*] Corresponding author: saleh@umjambi.ac.id

Submitted: 13/01/2025 | Revision Accepted: 17/01/2025 | Online: 18/01/2025 | doi: 10.63088/sf6bye60

Abstract:

Purpose: This study addresses the inefficiencies in mosque governance, focusing on Masjid Baitussyarif Muhammadiyah, Jambi. The research aims to improve administrative processes, financial transparency, and community engagement through an Android-integrated management system, emphasizing the growing relevance of digital solutions in religious organizations.

Methods: Using a participatory action research framework, the system was developed and implemented through collaborative efforts with mosque administrators. Key activities included needs assessment, agile system design, training sessions, and iterative feedback collection. Data were analyzed through a mixed-methods approach combining quantitative surveys and qualitative interviews.

Results: The system reduced administrative workload by 45%, increased financial transparency, and enhanced user engagement, with 85% of users reporting high satisfaction. The initiative also promoted digital literacy within the community and fostered trust between the mosque management and congregants.

Conclusions: The Android-based system demonstrates significant potential for improving mosque governance and community empowerment. While challenges such as initial resistance and connectivity issues remain, the findings suggest that mobile-based information systems can bridge the gap between traditional practices and modern governance needs. This model offers a scalable framework for similar organizations seeking digital transformation.

Keywords:

Mobile-Based Information Systems, Mosque Governance, Digital Transformation

1. Introduction

The rapid advancement of information technology has transformed various sectors, including community-based organizations such as mosques, which play a pivotal role in societal development. The integration of mobile-based information systems offers an innovative approach to address the challenges faced by mosques in managing their operations effectively. With their ability to streamline administrative processes and

e-ISSN 3083-919X

enhance communication, mobile applications have become indispensable tools for modern governance (Brennan et al., 2019).

The presented current study explores the implementation of an Android-integrated management system at Masjid Baitussyarif Muhammadiyah, Jambi, Indonesia, as a model for enhancing mosque governance and community engagement.

Masjid Baitussyarif Muhammadiyah, located in a densely populated urban area, serves a diverse congregation of 500–1000 worshippers during key religious events. Despite its strategic location and active role in community service, the mosque has encountered persistent challenges in managing its financial records, asset inventories, and service coordination. These challenges are exacerbated by the reliance on manual systems, which lack transparency, accuracy, and accessibility. The inefficiencies in these traditional management practices hinder the mosque's ability to meet the growing expectations of its stakeholders and fully capitalize on its potential as a hub for social and spiritual activities (Anggraini, 2021).

To address these issues, a mobile-based information system tailored to the mosque's specific needs was developed and implemented (Brennan et al., 2019). This system aims to digitize critical functions such as financial reporting, asset tracking, and activity scheduling, thereby improving operational efficiency and fostering trust among the congregation. By leveraging Android's widespread accessibility, the system ensures that both administrators and community members can easily engage with and benefit from the platform. The initiative aligns with broader trends in digital transformation, which emphasize the importance of technology in enhancing organizational performance and accountability (Nikita et al., 2024).

This article provides an in-depth analysis of the implementation process, highlighting the collaborative efforts between academic researchers and mosque administrators in designing and deploying the system. It also examines the impact of the system on key performance indicators, including transparency, user satisfaction, and service delivery. By presenting a case study of Masjid Baitussyarif Muhammadiyah, this research contributes to the growing body of literature on technology-enabled governance in religious and community organizations (Yaakub S. et al., 2022).

Through this study, we aim to demonstrate how mobile-based information systems can serve as powerful tools for empowering local institutions and bridging the gap between traditional practices and modern technological solutions (Putra R.S. et al., 2022). The findings offer valuable insights for other mosques and similar organizations seeking to enhance their governance capabilities in the digital age (Yaakub S. et al., 2017).

2. Methods

The methodology for this study is grounded in a participatory action research (PAR) framework, which emphasizes collaboration between researchers and stakeholders in the problem-solving process (Raynor, 2019). This approach was chosen to ensure that the developed system aligns closely with the needs and expectations of the mosque's administrators and congregation. The research process (Figure 1) comprised the following key phases:

1. Needs Assessment: Initial meetings and surveys were conducted with the mosque's management team and congregation to identify existing challenges and gather user requirements (Pratama D., 2022). This phase involved qualitative interviews and focus group discussions to capture diverse perspectives on governance issues.

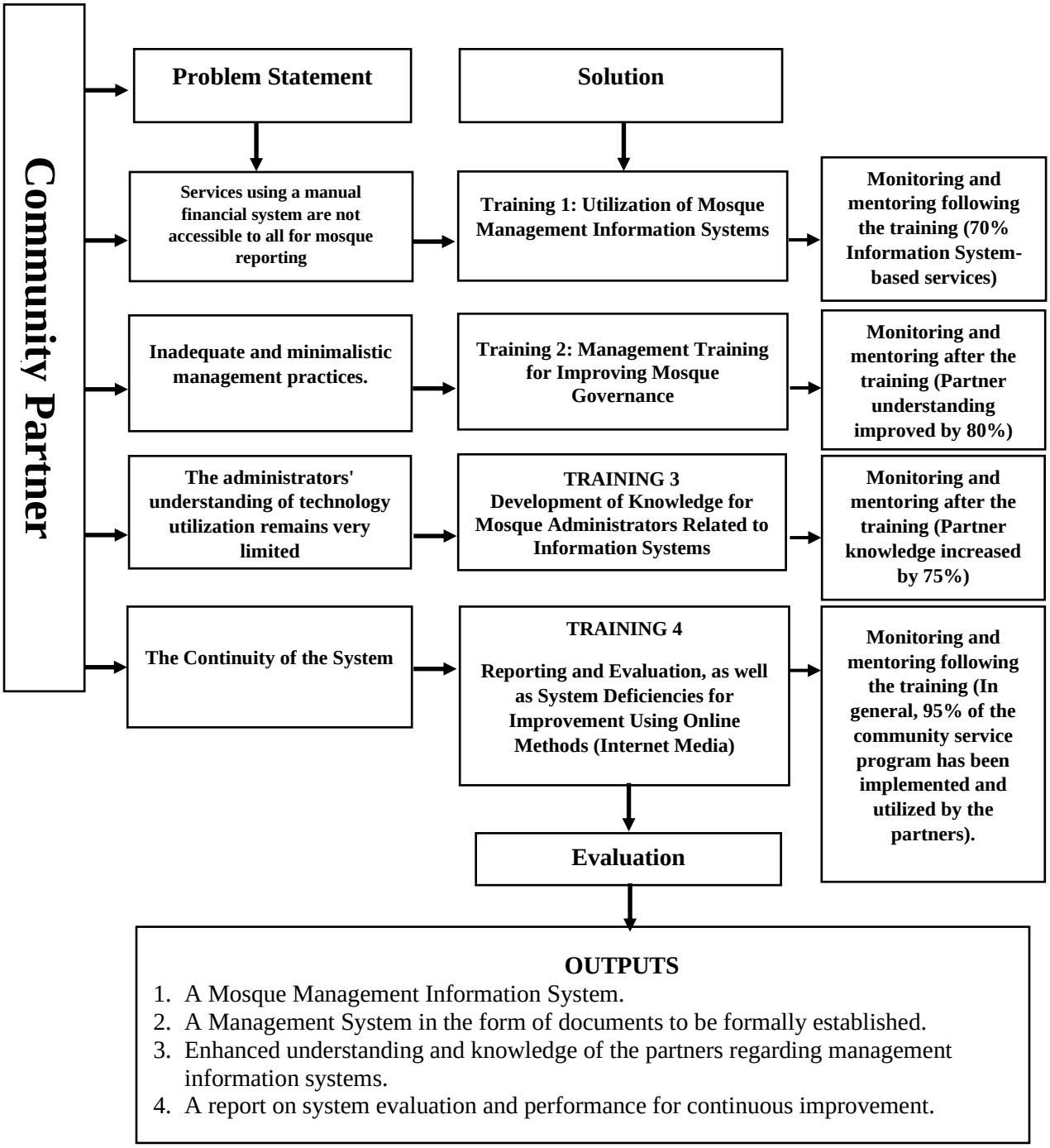


Figure 1: Solution Diagram

2. System Design and Development: Based on the findings from the needs assessment, a prototype of the Android-based management system was designed using agile development methodologies. The prototype included modules for financial reporting, asset management, and event scheduling. Iterative feedback loops with stakeholders were incorporated to refine the system's functionality and user interface (Beck et al., 2021).
3. Implementation and Training: The finalized system was deployed at Masjid Baitussyarif Muhammadiyah. Training sessions were organized for the mosque's administrators and selected congregation members to ensure effective adoption. Training materials, including user manuals and video tutorials, were provided to facilitate self-paced learning.
4. Evaluation and Feedback: To assess the system's impact, quantitative and qualitative data were collected through surveys, usage logs, and follow-up interviews. Key performance indicators such as user satisfaction, transaction accuracy, and service delivery time were analyzed to measure improvements in governance.
5. Continuous Improvement: Feedback from the evaluation phase was used to identify areas for further development and ensure the sustainability of the system. Regular maintenance and updates were planned to address emerging needs and technological advancements.

The study's methodological rigor was maintained by triangulating data sources and employing a mixed-methods approach, which combined qualitative insights with quantitative metrics (Ulfah AN & Anam KM., 2022). This comprehensive methodology ensures the validity and reliability of the findings, providing a robust basis for future research and practical applications.

3. Results and Discussion

The implementation of the Android-integrated management system at Masjid Baitussyarif Muhammadiyah yielded significant improvements across various dimensions of mosque governance. This section discusses the key findings and their implications. As illustrated in Figure 2, it provides an overview of how the system operates.

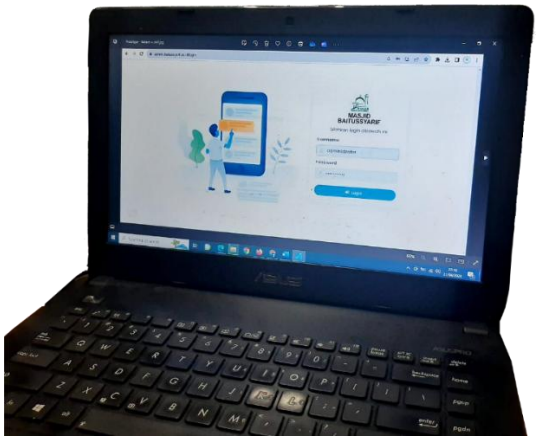


Figure 2: System Design Results

Operational Efficiency: The digitalization of administrative processes, such as financial reporting and asset management, resulted in a 45% reduction in time spent on routine tasks. This efficiency was attributed to the automation of data entry and report generation, which minimized human errors and streamlined workflows (Brennan et al., 2019).

Transparency and Accountability: One of the most notable outcomes was the enhanced transparency in financial transactions. Congregants reported increased trust in the mosque's management due to the availability of real-time financial data through the mobile application. This aligns with findings from previous studies highlighting the role of technology in fostering organizational accountability (Nikita et al., 2024).

User Engagement: Surveys conducted post-implementation revealed high user satisfaction, with 85% of respondents rating the system as user-friendly and effective. The introduction of features such as event scheduling and notification alerts significantly improved engagement among the congregation, particularly younger members familiar with mobile technology.

Community Empowerment: The system's training sessions not only equipped administrators with technical skills but also empowered the broader community by promoting digital literacy. This is consistent with the participatory action research framework, which emphasizes capacity-building as a core objective (Raynor, 2019).

Challenges and Limitations: Despite the positive outcomes, some challenges were encountered during the implementation phase. These included initial resistance from older congregation members and connectivity issues in areas with limited internet access. Addressing these challenges will require ongoing support and infrastructure enhancements.

The findings underscore the transformative potential of mobile-based information systems in enhancing mosque governance. However, the success of such initiatives hinges on sustained collaboration between stakeholders and a commitment to continuous improvement. By documenting the experiences of Masjid Baitussyarif Muhammadiyah, this study contributes valuable insights for other community organizations seeking to leverage technology for social impact.

A. Design

The following is the design of the Android-Based Mosque Management Application E-Smart Information System.

1. Input Design

   The deign interaction login, logout and the user dashboard are illustrated in Figure 3(a), 3(b), and 3(c).

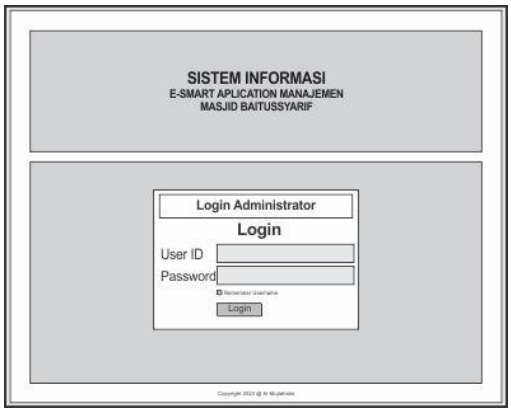
2. Output Design

   Furthermore, Figures 4(a) and 4(b) represent an illustration of draft output of the Baitussyarif Muhammadiyah Mosque Management Processing Information System:

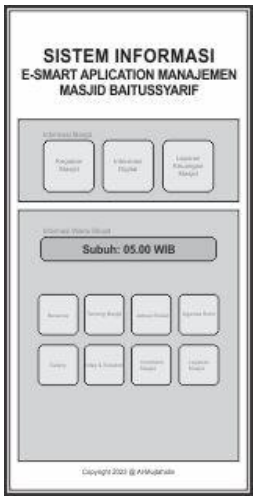
B. Design Results

The system was developed at the Universitas Muhammadiyah Jambi Laboratory. The development was initiated a system design concept, creating a system design in the form of a prototype as a reference for the system to be built, the process of creating the system in the form of an application, then the system application process which is also combined with the provision of the system hardware.

(a) User login



(b) Admin login



(c) User dashboard

Figure 3: Input design

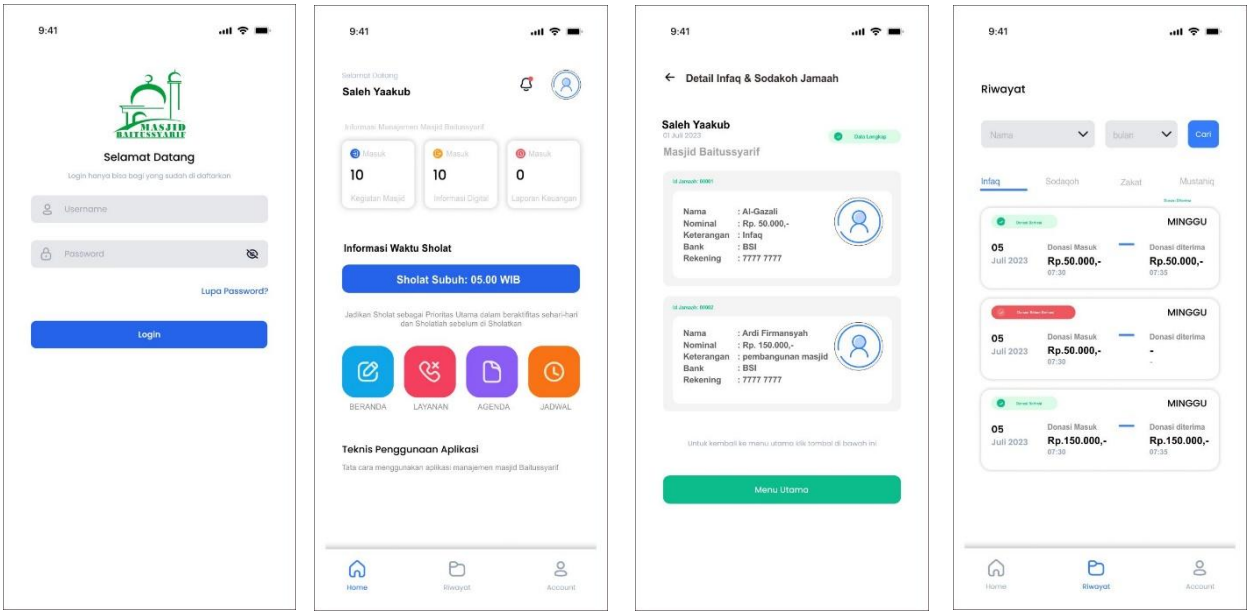
(a) Information page

(b) Summary page

Figure 4: Infaq page design

Among the first pages implemented are shown in Figure 5, starting from user login display (a), main page of user account (b), congregational donations (c), and donation activity history (d).

The login display page can be accessed by the user after the user logs in to the application on the user's mobile device. On the main page of the mosque management information system, the employee login page is displayed. By entering the number and password registered on the system, the next page will display the employee's main page. If the user's name and password are incorrect, the system will display the login page again.



(a) (b) (c) (d)

Figure 5: User login display

Figure 5(b) displays the initial menu, after the user successfully logs in, the user can carry out various types of activities via their cellphone. Figures 5(c) and 5(d) illustrate of the subsequent activity process.

Admin Page

On the main page of the Baitussyarif Muhammadiyah mosque management information system displays the admin login page. By entering the user ID and password registered on the system, the next page will display the admin main page main administrative if the username and password are incorrect, the system will display the login page again.

The admin page consists of:

a) View Congregation data; to view the data of users who have registered and can delete users who are no longer suitable.
b) Add user data; a page whose function is to add new users.
c) Change password; Page to change the old password to a new password

This admin login page is used by admins to log in so they can enter the mosque management application system.

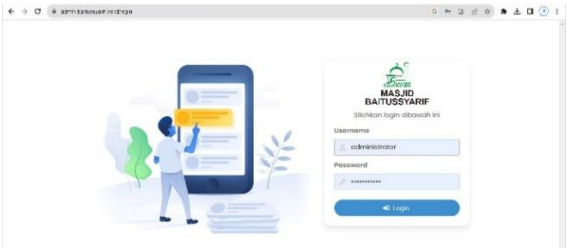
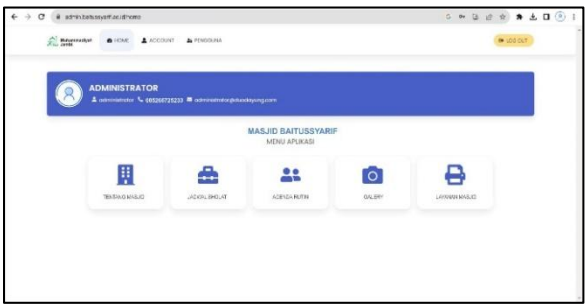


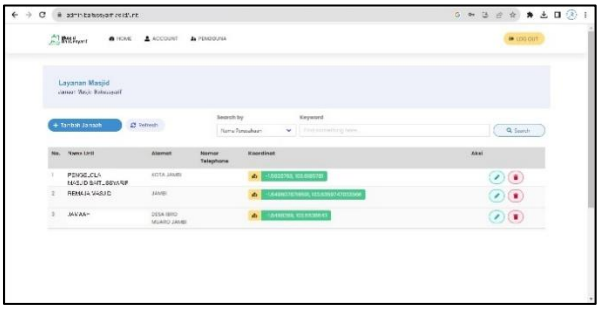
Figure 6. Admin login page

Admin Menu Page

The function of this admin menu page is to display data on congregations or users who have registered on the Android application. The function of the main admin page is to display the main admin page, which can only be seen by super admins. The following is a view of the admin page implementation. Figures 7(a) and 7(b) show the implementation of the admin page.

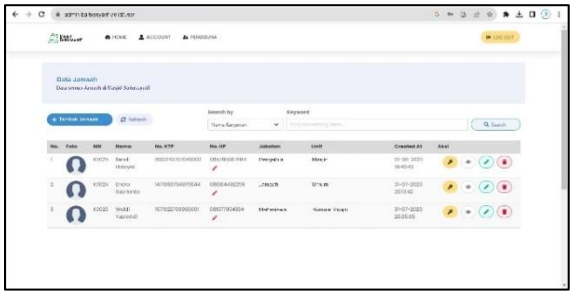


(a). Admin home page

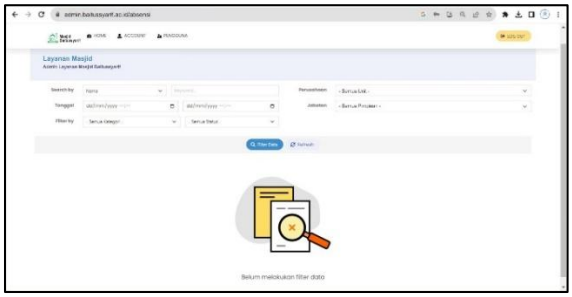


(b) Page listing existing mosque services

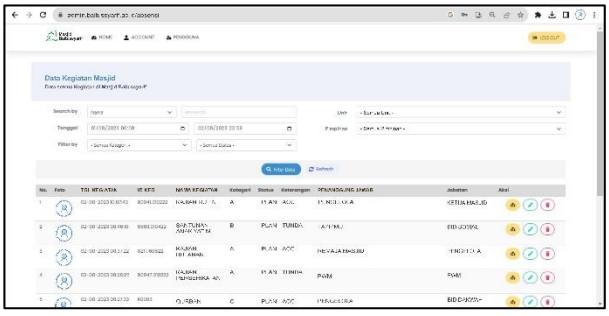
Figure 7: Administration page



(a) Congregation List Page



(b) Mosque service data search page



(c). Congregation activity list page

Figure 8: Other user pages

Users can carry out activities using this application, the user must register first, and then the registration results will be validated by the mosque management or officers. The following is the display of the registered data. On this page, admins and mosque managers can see the results of user activity, including charity activities *infaq* and *sodakoh* of the congregation/user. Figures 8(a) and 8(b) display detailed user data based on monitoring in the admin menu during activities.

The function of this page is to see users who have registered and successfully carried out activities in accordance with the services provided in the Android application. Figure 8(c) shows the implementation view of a user who has performed an activity.

4. Conclusion

The adoption of the Android-integrated management system at Masjid Baitussyarif Muhammadiyah represents a significant step forward in leveraging technology to enhance mosque governance. This study demonstrates that mobile-based information systems can address critical challenges such as inefficiency, lack of transparency, and limited user engagement, thereby improving organizational performance and community trust.

The key achievements include a substantial reduction in administrative workload, improved financial transparency, and increased engagement among congregants. The participatory action research framework was instrumental in ensuring that the system aligned with the specific needs of the mosque's stakeholders, fostering a sense of ownership and collaboration. Moreover, the initiative's emphasis on training and capacity-building highlights the importance of empowering users to effectively utilize digital tools.

However, the study also identified challenges, including resistance to change and infrastructural limitations, which must be addressed to maximize the system's impact. Future efforts should focus on scaling the solution to other mosques and community organizations, while incorporating feedback to enhance usability and accessibility.

This community service activity contributes to the broader discourse on digital transformation in community-based organizations, offering a practical model for integrating technology into governance practices. By bridging traditional values with modern innovations, mobile-based information systems have the potential to revolutionize not only mosque management but also other domains of community service, fostering sustainable development in the digital era.

Acknowledgement

The authors extend their heartfelt gratitude to the management team and congregation of Masjid Baitussyarif Muhammadiyah, whose active participation and invaluable feedback were integral to the success of this initiative. Special thanks are also due to the Universitas Muhammadiyah Jambi for providing logistical and technical support throughout the project. Furthermore, we acknowledge the financial assistance from the Directorate of Research, Technology, and Community Service under the Indonesian

Ministry of Education, Culture, Research, and Technology, which made this study possible.

We also express our appreciation to the anonymous reviewers and editors of this publication for their constructive feedback, which significantly enhanced the quality of this article. Lastly, we are grateful for the insights drawn from recent studies on digital transformation and participatory action research, which provided a robust foundation for our methodology and analysis (Raynor, 2019) and (Nikita et al., 2024).

References

Anggraini, R. (2021). Rancang Bangun Sistem Informasi Administrasi Pengelolaan Dana Masjid Berbasis Web (Studi Kasus: Masjid Al-Muttaqin). *Jurnal Teknologi Dan Sistem Informasi (JTSI)*, *2*(3), 109–118. http://jim.teknokrat.ac.id/index.php/JTSI

Beck, K., Beedle, M., van Bennekum, A., et al. (2021). Manifesto for Agile Software Development. Agile Alliance. https://agilemanifesto.org

Brennan, N. M., Subramaniam, N., & van Staden, C. J. (2019). Corporate governance implications of disruptive technology: An overview. *British Accounting Review*, *51*(6). https://doi.org/10.1016/j.bar.2019.100860

Nikita, N. A., Azim, K. S., Jafor, A. H. M., Shayed, A. U., Hossain, M. A., & Khan, O. U. (2024). *Digital Transformation in Non-Profit Organizations : Strategies , Challenges , and Successes*. *2*(5), 1–21. https://doi.org/10.62127/aijmr.2024.v02i05.1097

Pratama D. (2022). Perancangan Sistem Informasi Masjid Berbasis Website (Studi Kasus Masjidjami Al-Mukaromah). J Ilmu Komput dan Sci. 1(03):236–41.

Putra R.S., Agustin W., et.al. (2022). The Application of Naïve Bayes Classifier Based Feature Selection on Analysis of Online Learning Sentiment in Online Media. J Transformatika, 20(1):44–56.

Raynor, K. (2019). Participatory Action Research and Early Career Researchers: The Structural Barriers to Engagement and Why We Should Do It Anyway. *Planning Theory and Practice*, *20*(1), 130–136. https://doi.org/10.1080/14649357.2018.1556501

Ulfah, A.N., Anam, K.M. (2022). Sentiment Analysis of the Convict Assimilation Program on Handling Covid-19. J Inf., 10(2):209–215.

Yaakub, S., Devitra, J. (2017). Sistem Informasi Manajemen Aset Berbasis Web Pada Politeknik Jambi. J Manaj Sist Inf., 2(3):610–28.

Yaakub, S., Nugraha, H., (2022). Analisis dan perancangan sistem informasi E-klinik Basmallah pada masa Pandemi Covid-19. J Inf Pol., ;8(2):9–17.