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Introducing and Evaluating an E-Learning Platform for Hajj Guide Certification through Community Service Using the System Usability Scale

Aris Rakhmadi*[1], Syarifur Rizal Miftahul Hasan[2]
*[12]Department of Informatics Engineering, Universitas Muhammadiyah Surakarta
e-mail: [1]aris.rakhmadi@ums.ac.id*, [2]l200220033@student.ums.ac.id

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ABSTRAK

Perkembangan teknologi informasi mendorong transformasi digital dalam berbagai kegiatan pelatihan dan sertifikasi, namun proses sertifikasi pembimbing ibadah haji masih dilakukan secara terfragmentasi menggunakan berbagai platform yang tidak terintegrasi, sehingga menimbulkan inefisiensi dalam distribusi materi, pengelolaan tugas, dan evaluasi peserta. Kegiatan pengabdian kepada masyarakat ini bertujuan untuk mengevaluasi usability sistem e-learning sebagai solusi digital yang potensial dalam konteks sertifikasi pembimbing ibadah haji. Metode pelaksanaan dilakukan melalui pendekatan simulasi terstruktur yang meliputi tahap identifikasi kebutuhan, demonstrasi sistem, interaksi pengguna, serta evaluasi usability menggunakan System Usability Scale (SUS) terhadap 23 responden yang memiliki pengalaman dalam kegiatan sertifikasi. Hasil evaluasi menunjukkan nilai rata-rata SUS sebesar 71,13 yang termasuk dalam kategori acceptable dengan tingkat usability yang memadai, yang mengindikasikan bahwa sistem telah memenuhi aspek usability dasar. Dengan demikian, sistem e-learning yang diusulkan berpotensi sebagai solusi digital untuk mendukung proses sertifikasi secara lebih terstruktur, meskipun masih diperlukan penyempurnaan pada aspek antarmuka dan navigasi guna meningkatkan pengalaman pengguna.

Kata kunci: E-Learning; Evaluasi Usability; Sertifikasi Haji; System Usability Scale; Transformasi Digital

ABSTRACT

The rapid advancement of information technology has driven digital transformation across various training and certification activities; however, the Hajj guide certification process is still conducted through fragmented, non-integrated platforms, leading to inefficiencies in material distribution, task management, and participant evaluation. This community service activity aims to evaluate the usability of an e-learning system as a potential digital solution for Hajj guide certification. The implementation method adopts a structured simulation-based approach, including needs assessment, system demonstration, user interaction, and usability evaluation using the System Usability Scale (SUS) involving 23 respondents with relevant certification experience. The results indicate an average SUS score of 71.13, which falls into the "acceptable" category, reflecting an adequate level of usability and suggesting that the system meets fundamental usability requirements. Therefore, the proposed e-learning system shows potential as a digital solution to more structurally support certification processes. However, further improvements in interface design and navigation are necessary to enhance the overall user experience.

***Keywords**: Digital Transformation; E-Learning; Hajj Certification; System Usability Scale; Usability Evaluation*

INTRODUCTION

The rapid advancement of information and communication technology (ICT) has significantly transformed various aspects of human activity, including education and professional training (Hatta et al., 2023; Rmili et al., 2025). Digital technologies have enabled more flexible, accessible, and scalable learning environments across different domains. In particular, e-learning systems have become a prominent solution for delivering structured learning content and supporting remote interactions (Rakhmadi & Haryanti, 2025). This transformation highlights the growing need for digital systems in training and certification processes.

In the context of professional certification, digital platforms play an essential role in ensuring efficiency and consistency in learning delivery and assessment (Rakhmadi, Rochmijatun, Winiarti, et al., 2025). Training programs increasingly require integrated systems that can manage learning materials, participant progress, and evaluation processes within a single platform. The adoption of digital solutions is particularly relevant to certification activities involving multiple stakeholders and complex administrative procedures. Therefore, integrating e-learning systems is considered a strategic approach to enhancing the effectiveness of certification processes (Rakhmadi & Haryanti, 2023).

Despite the widespread adoption of digital learning systems, certain domains still rely on conventional, fragmented approaches (Rakhmadi, Rochmijatun, Nurgiyatna, et al., 2025). One such case is the certification process for Hajj guides, which involves training, assessment, and administrative validation. In many cases, these processes are not supported by a unified digital system (Binsawad & Albahar, 2022; Felemban et al., 2020; Hammad & Felemban, 2025). As a result, multiple tools are used simultaneously without proper integration, leading to inefficiencies.

Based on field observations and interviews with alumni of Hajj guide certification programs, the current process is carried out across various disconnected platforms (M. A. Khan & Alghamdi, 2024; Nurahmadi, 2025; Nurcahyo et al., 2025). Communication and coordination are typically handled through messaging applications such as WhatsApp, while assignment submissions are managed via email. Synchronous sessions are conducted using video conferencing tools such as Zoom, creating a fragmented learning environment (Adwimurti et al., 2022; Hassan et al., 2022). This lack of integration complicates the overall training and certification workflow.

The fragmented nature of the system leads to several operational challenges. Participants often have difficulty accessing learning materials due to the high volume of messages on communication platforms. Additionally, tracking participant progress is challenging for administrators because data is dispersed across multiple channels. The evaluation process is also affected, with delays in grading and in the issuance of certifications commonly reported. These issues collectively reduce the efficiency and effectiveness of the certification process.

Although previous studies have explored the development and implementation of e-learning systems in educational settings, their application to Hajj guide certification remains limited (E. A. Khan & Shambour, 2018; Nurul Izza et al., 2023; Showail, 2022). Existing systems are generally designed for formal education and may not address the specific needs of certification processes in this domain. Furthermore, many studies focus primarily on system development rather than evaluating usability from the user perspective (Abdullah Haidar & Siti Annisa Satifa, 2023). As a result, there is a lack of user-centered evaluation in this context.

Usability evaluation is a critical factor in determining whether a system can be effectively adopted by its intended users (Mohammed Ahmed Zaid et al., 2024). Without proper usability assessment, even well-designed systems may fail to meet user expectations. In addition, users involved in certification activities may have varying levels of digital literacy, which further emphasizes the importance of usability considerations. Therefore, evaluating usability is essential to ensure that digital solutions are practical and acceptable for real-world use.

To address these challenges, this community service program introduced an integrated e-learning system to individuals with prior experience in Hajj guide certification activities. These participants were selected as the target beneficiaries because they had directly experienced fragmented processes involving learning materials, communication, assignment submission, assessment, and certification administration. The program consisted of a needs assessment, system introduction, guided demonstration, hands-on simulation, reflective discussion, and usability evaluation. Through these activities, participants were provided with practical experience in accessing learning materials, submitting documents, completing online assessments, and monitoring certification requirements within a single digital platform.

The community service aspect of the program emphasized participant empowerment rather than merely collecting usability data. Participants were encouraged to develop practical digital skills, understand the benefits of integrated certification management, and identify potential challenges in adopting the system. Their feedback was also used as a participatory contribution to system improvement. In practical terms, the activity was expected to strengthen participants' readiness to use digital certification services and provide recommendations for developing a more accessible, efficient, and user-oriented certification process.

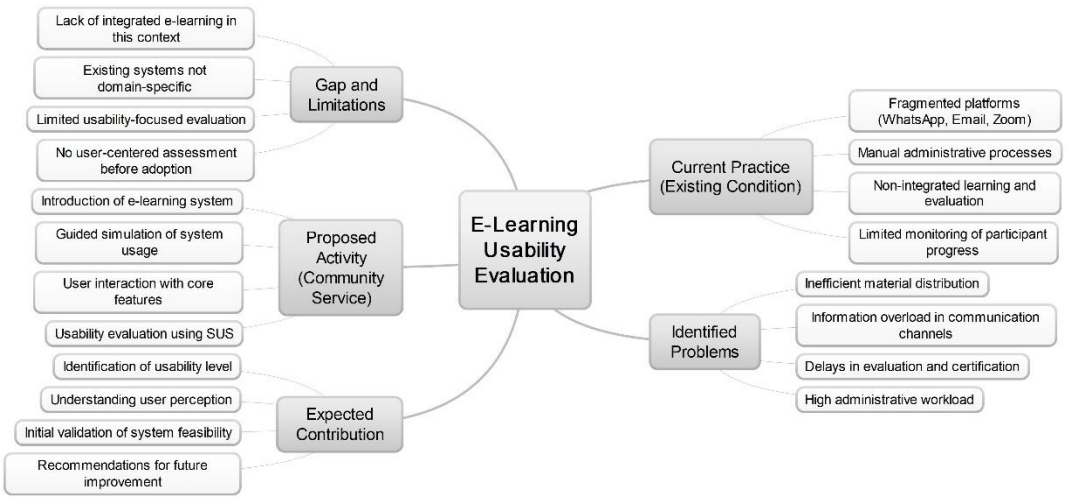

Figure 1. Conceptual Framework of Problem Identification, Gap Analysis, and Community Service Activity

The overall conceptual framework of the activity, including the identified problems, gaps, and proposed solutions, is illustrated in Figure 1. The figure presents a mind map that highlights the relationships among existing conditions, identified challenges, research gaps, and the proposed activity. It also outlines the expected contributions of the usability evaluation process. This visualization provides a comprehensive overview of the rationale

behind the activity.

Based on this framework, the community service activity aimed to introduce an integrated e-learning system, provide participants with practical experience in using digital certification services, and strengthen their readiness to adopt a more centralized certification process. The activity also aimed to evaluate user perceptions of the system using the System Usability Scale (SUS) and to collect participant feedback for future system improvement. Therefore, the SUS assessment was positioned as an evaluation instrument within the broader community service program rather than as the sole purpose of the activity. The findings were expected to demonstrate the practical benefits of the program for participants and provide recommendations for the future implementation of the system in Hajj guide certification activities.

METHOD OF IMPLEMENTATION

The implementation method for this community service activity adopts a structured, user-centered approach consisting of four main stages: preparation and needs assessment, system introduction and demonstration, simulation and usability evaluation, and data analysis and reflection. This approach is designed to evaluate the usability of the proposed e-learning system as a potential digital solution for Hajj guide certification. As illustrated in Figure 2, the overall process emphasizes guided simulation and user perception rather than direct deployment in real training activities.

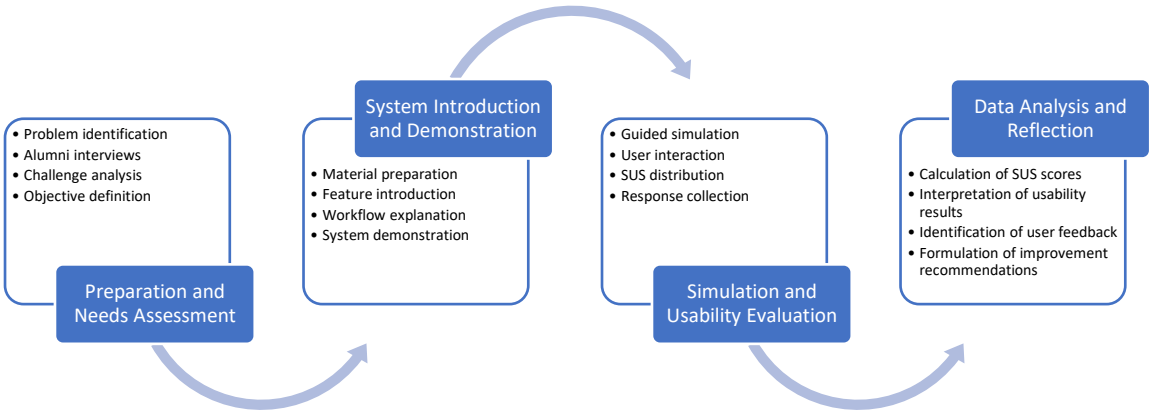

Figure 2. Four-Stage Implementation Flow of the Community Service Activity for E-Learning Usability Evaluation

The community service activity was conducted through separate sessions at several locations during March 2026. The activity sites included KBIHU Zam Zam Colomadu, KBIHU Basmallah Colomadu, KBIHU NU Arofah, and the Office of the Ministry of Religious Affairs of Boyolali Regency. Several individual practitioners holding professional Hajj guide certification also participated independently. Since the sessions were conducted at different locations and times, the duration of each session varied according to the number of participants and the conditions at each site. Nevertheless, all sessions followed the same core sequence, consisting of system introduction, demonstration, guided simulation, usability evaluation, and participant feedback.

A total of 23 certified Hajj guides participated in the activity. All participants had completed professional Hajj guide certification and had practical experience in Hajj guidance activities. Most participants were over 36 years old. All participants had completed at least a bachelor's degree, while most held master's degrees. Gender information and detailed individual educational data were not documented during the

activity. The participants were generally familiar with digital communication, online learning, document-sharing, and video-conferencing platforms. Therefore, their digital literacy was descriptively considered high, although it was not measured using a standardized digital literacy instrument. The available participant characteristics are summarized in Table 1.

Table 1. Descriptive Characteristics of the Participants

Characteristic	**Description**
Number of participants	23 participants
Professional background	Certified Hajj guides
Previous Hajj certification experience	All participants had completed professional Hajj guide certification
Age	Predominantly over 36 years old
Gender	Not documented
Educational background	Minimum bachelor's degree; most participants held master's degrees
Digital literacy	Generally high based on familiarity with commonly used digital platforms; not measured using a standardized instrument
Participant affiliation	KBIHU Zam Zam Colomadu, KBIHU Basmallah Colomadu, KBIHU NU Arofah, the Office of the Ministry of Religious Affairs of Boyolali Regency, and independent certified Hajj guide practitioners

The first stage, preparation and needs assessment, focuses on identifying the key challenges in the existing certification process. Initial data collection was conducted through interviews with alumni who had previously participated in Hajj guide certification programs. The findings indicate that the current process relies on fragmented platforms, such as messaging applications, email, and video conferencing tools, leading to inefficiencies in material distribution, assignment submission, and evaluation management. These conditions form the basis for defining the usability evaluation objectives.

In addition to interviews, this stage includes problem mapping to analyze both operational and administrative constraints within the certification process. Particular attention is given to issues such as information overload in communication channels, delays in evaluation and certification issuance, and the absence of a centralized system for managing participant data (Rakhmadi, Hartono, et al., 2025). These insights are used to determine the key usability aspects to be evaluated, including system accessibility, ease of use, efficiency, and user satisfaction.

The second stage, system introduction and demonstration, aims to familiarize participants with the e-learning system's features and functionality. Demonstration materials were prepared to ensure that the presentation is clear, structured, and easy to understand. The system is introduced as an integrated platform that supports user authentication, document submission and verification, access to learning materials, online examinations, and digital certificate management.

During this stage, participants are guided through the system workflow using scenario-based demonstrations. Each core feature is explained in detail, including the

processes for registration, navigating learning materials, taking online assessments, and accessing certification results. This structured introduction ensures that participants have a comprehensive understanding of the system before engaging in direct interaction (Rakhmadi et al., 2026).

The facilitators were responsible for explaining the objectives of the activity, introducing the certification problems addressed by the system, demonstrating the complete system workflow, and responding to participant questions. They also ensured that the same core features and instructions were presented across all activity sites. During the demonstration, participants were introduced to account access, document submission and verification, learning material access, online examinations, examination results, and digital certificate management.

The third stage, simulation and usability evaluation, represents the core activity of the implementation process. Participants are invited to interact directly with the system through guided simulation sessions. They perform a series of representative tasks, such as logging into the system, uploading required documents, accessing learning materials, and completing sample examinations. This hands-on interaction enables participants to experience the system from a user perspective.

The same simulation procedure was applied at each activity site. Participants were instructed to complete a sequence of representative tasks, including logging into the system, reviewing the main dashboard, accessing and downloading learning materials, uploading a sample certification document, checking the document verification status, completing a sample online examination, reviewing the examination result, and accessing information related to certificate eligibility. These tasks represented the principal activities expected to be performed during a digital Hajj guide certification process.

Following the simulation session, usability evaluation is conducted using the System Usability Scale (SUS). A total of 23 respondents, consisting of individuals with relevant experience in Hajj guide certification activities, participated in the evaluation. The questionnaire is distributed after the simulation, and participants are given clear instructions to ensure consistency in their responses. The collected data reflect user perceptions regarding system usability, efficiency, and overall satisfaction.

During the simulation, the facilitators provided instructions and assisted participants who encountered access or technical difficulties. The assistance was limited to clarifying the task sequence and resolving operational problems so that participants could complete the main tasks independently. The facilitators also observed recurring user difficulties and collected comments related to interface clarity, navigation, accessibility, and the relevance of the system to Hajj guide certification activities. After completing all simulation tasks, participants completed the SUS questionnaire and were invited to provide comments and suggestions regarding potential system improvements.

The final stage, data analysis and reflection, involves processing and interpreting the usability data obtained from the participants. SUS scores are calculated using standard procedures and interpreted based on established acceptability ranges and grading scales. The SUS questionnaire consisted of 10 statements rated using a five-point Likert scale ranging from 1, indicating strong disagreement, to 5, indicating strong agreement. For odd-numbered items, one point was subtracted from the participant's response, while for even-numbered items, the response value was subtracted from five. The adjusted scores were summed and multiplied by 2.5 to produce an individual SUS score ranging from 0 to 100. The overall usability score was obtained by calculating the average score of all 23 participants. The analysis results are used to identify usability strengths and potential issues within the system. Furthermore, user feedback is analyzed to inform recommendations for future improvements, positioning the system as a viable digital solution that more effectively and efficiently supports certification activities.

RESULTS OF THE ACTIVITY

The results of this community service activity are presented based on the system demonstration outcomes, user interactions during the simulation, and the usability evaluation. The e-learning system was introduced to participants through guided sessions, allowing them to explore its main features and provide feedback based on their experience. The following subsections describe the system's key interfaces and the results of the usability evaluation.

As presented in Table 1 in the Method of Implementation section, the activity involved 23 certified Hajj guides with relevant professional experience. Most participants were over 36 years old and had completed at least a bachelor's degree, while the majority held master's degrees. Their familiarity with digital communication, online learning, document-sharing, and video-conferencing platforms supported their participation in the system demonstration and guided simulation. These characteristics indicate that the activity reached beneficiaries who were professionally relevant and sufficiently familiar with digital technology to provide practical feedback on the proposed e-learning system.

The login page serves as the initial access point for users to enter the system. As shown in Figure 3, the interface provides input fields for email and password, along with an alternative login option using a Google account. The design emphasizes simplicity and clarity, enabling users to quickly understand how to access the platform without requiring extensive instructions.

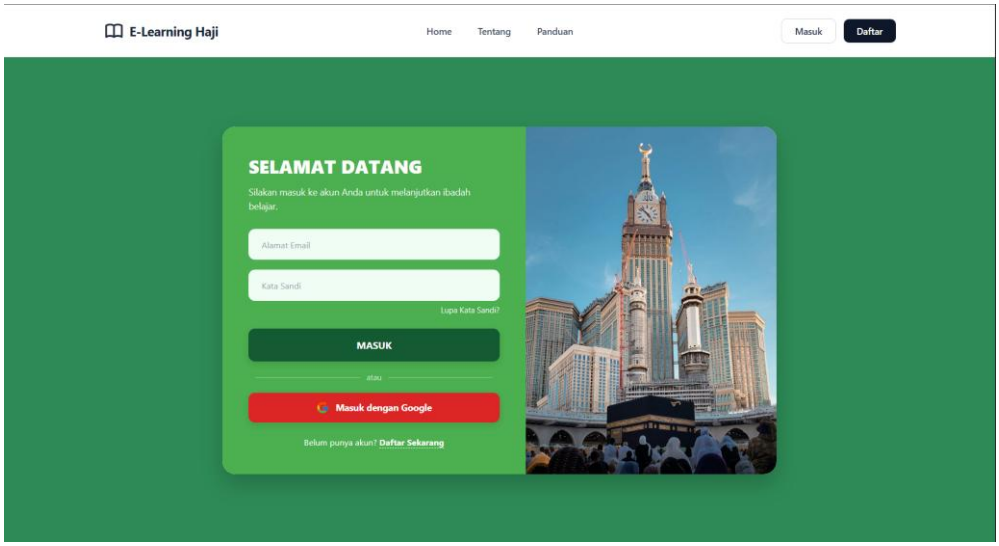

Figure 3. Login Interface of the E-Learning System during Simulation Activity

During the simulation activity, participants were able to log in independently. Most users reported that the authentication process was straightforward and easy to follow. The clarity of the interface layout and the minimal number of required steps contributed to a positive initial impression, supporting the system's usability at the point of entry.

The learning materials page, illustrated in Figure 4, provides participants with centralized access to training content. The interface allows users to view and download materials in digital formats, supporting self-paced learning. The structured organization of content enables users to navigate between topics efficiently.

Figure 4. Learning Materials Interface Providing Centralized Access to Training Content

Participants interacted with the materials page by accessing and reviewing available content during the simulation session. Feedback indicated that the centralized storage of materials significantly improves accessibility compared to fragmented distribution methods. Users appreciated the ability to revisit materials at any time, which enhances flexibility in the learning process.

The examination page, presented in Figure 5, facilitates online assessment through a structured interface. The system displays questions along with multiple-choice answers, and incorporates a randomized question mechanism to ensure fairness. This feature is intended to minimize the risk of answer sharing among participants.

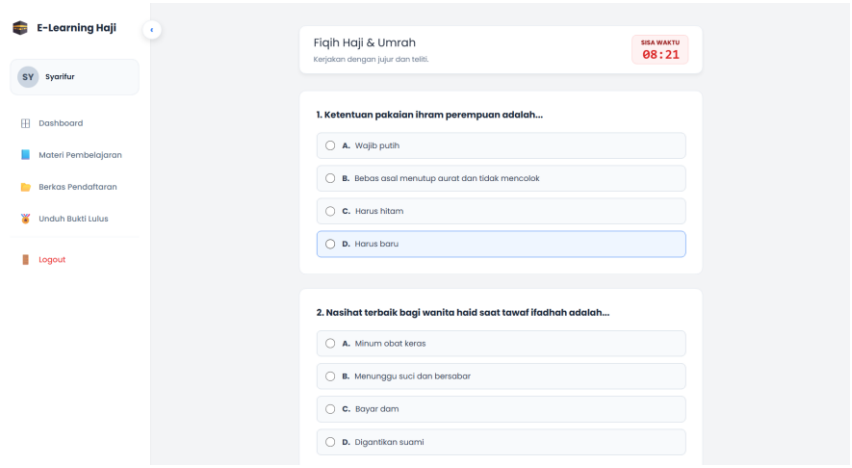

Figure 5. Online Examination Interface with Randomized Question Mechanism

During the simulation, users completed sample examinations using this interface. The system automatically calculated and displayed the results after submission, reducing the need for manual evaluation. Participants highlighted that this feature simplifies the assessment process and provides immediate feedback, benefiting both users and administrators.

The document verification page, shown in Figure 6, enables participants to upload required registration documents and monitor their verification status. The system provides clear indicators such as "pending," "accepted," and "rejected," allowing users to track the progress of their submissions.

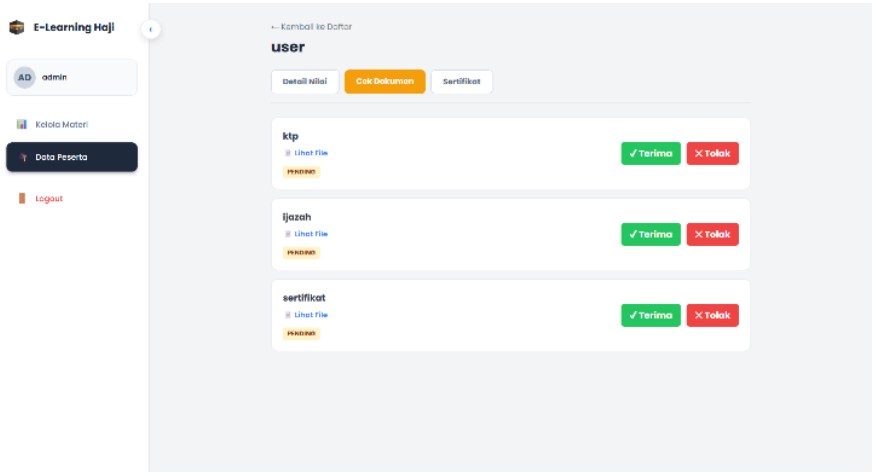

Figure 6. Document Submission and Verification Interface with Status Tracking

From the simulation results, participants reported that the document verification feature improves transparency in the administrative process. The ability to upload and monitor documents directly within a single platform reduces reliance on external communication tools, thereby enhancing efficiency and user convenience.

The certificate page, illustrated in Figure 7, provides access to digital certification upon completion of all required criteria. The system automatically validates conditions such as document approval, learning progress, and examination scores before enabling certificate access.

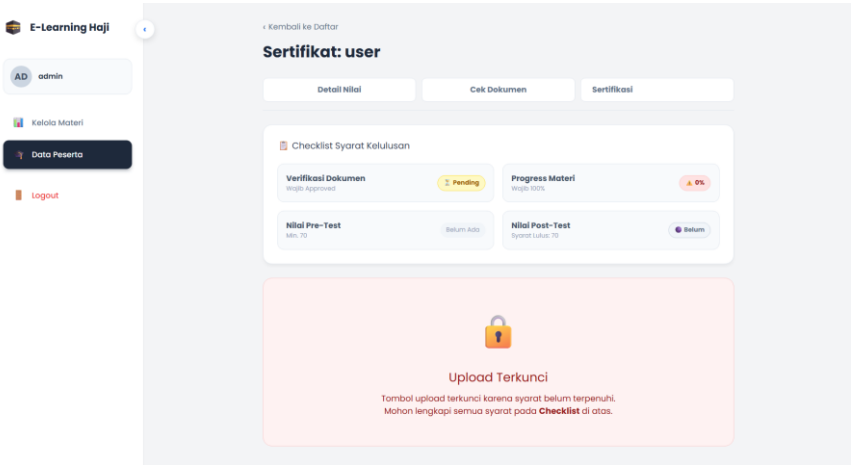

Figure 7. Digital Certificate Interface with Automated Eligibility Validation

Participants responded positively to this feature, noting that the automated validation process reduces administrative delays and ensures that certification requirements are clearly communicated. The integration of certification into the system contributes to a more streamlined, structured process than conventional methods.

The usability evaluation of the system was conducted using the System Usability Scale (SUS), and the results are summarized in Table 2. A total of 23 respondents participated in the evaluation, providing quantitative data on their perceptions of system usability. The calculated average SUS score is 71.13.

Table 2. System Usability Scale (SUS) Results of the E-Learning System

Metric	Value

Average Score	71.13
Grade	C
Adjective Rating	OK
Acceptability	Acceptable

Based on standard SUS interpretation, this score falls within the "acceptable" range, indicating that the system meets basic usability requirements (Rakhmadi, Rochmadi, et al., 2025). The result also corresponds to a "Grade C" rating with an "OK" adjective classification, suggesting that while the system is usable, there is still room for improvement.

The distribution of SUS scores is further illustrated in Figure 8. The visualization shows that most respondents provided scores within the acceptable range, with relatively consistent evaluations across participants. This consistency reflects a generally positive perception of the system's usability.

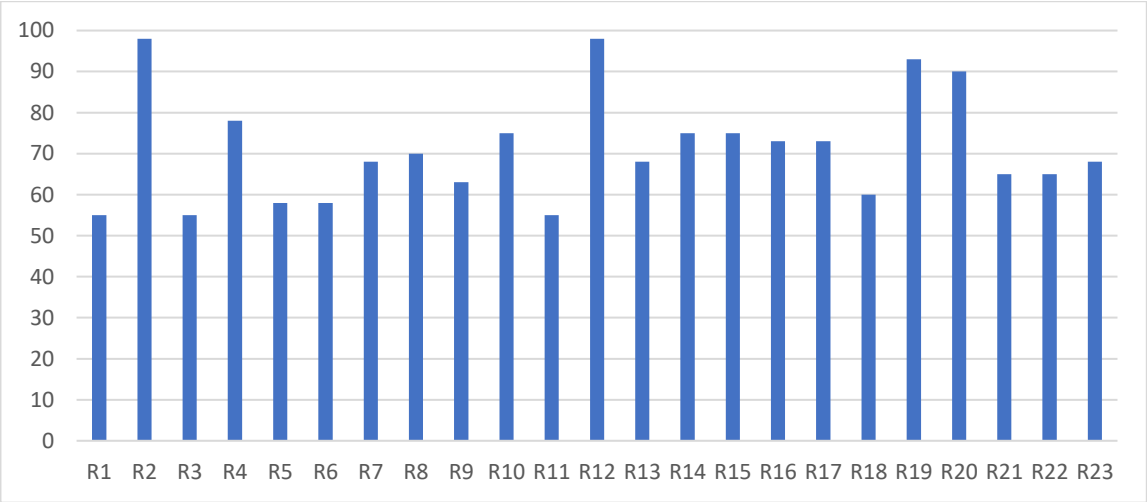

Figure 8. Distribution of System Usability Scale (SUS) Scores among Participants

Further analysis of user responses indicates that the system performs well in terms of ease of use and accessibility. However, some participants suggested improvements related to interface clarity and navigation efficiency. These insights highlight areas where the system can be refined to enhance user experience.

The indicators presented in Table 3 show that the activity achieved its initial objectives by involving relevant beneficiaries, providing practical exposure to an integrated certification workflow, and generating user feedback for future system improvement. The success of the activity was therefore not assessed solely through the SUS score, but also through participant involvement, completion of representative simulation tasks, and contribution to the system evaluation process. These outcomes indicate that the program supported participants' initial readiness to use an integrated digital certification platform.

However, the activity did not include a pretest–posttest assessment or a standardized digital literacy instrument. Therefore, the results cannot be interpreted as quantitative evidence of increased digital literacy or improved participant knowledge. The findings are limited to practical exposure, initial digital readiness, usability acceptance, and participant involvement during the simulation. Future activities should include measurable learning indicators to assess changes in participant understanding and digital competence more accurately.

Table 3. Indicators of Community Service Activity Achievement

Indicator	Evidence from the Activity	Interpretation
Relevance of target beneficiaries	All 23 participants were certified Hajj guides	The activity involved beneficiaries with relevant professional backgrounds
Practical participation	Participants interacted directly with the main system features during the guided simulation	The activity provided practical experience rather than only a system presentation
Exposure to an integrated certification workflow	Participants accessed learning materials, uploaded documents, completed sample examinations, and reviewed certificate information	Participants were introduced to a centralized digital certification process
System usability acceptance	The average SUS score was 71.13 and classified as acceptable	The system met fundamental usability requirements
Participant contribution	Participants provided feedback on interface clarity, navigation, accessibility, and interaction flow	The activity generated practical recommendations for system improvement
Initial digital readiness	Participants were familiar with digital communication and learning platforms	Participants demonstrated readiness to participate in a digital certification process

Overall, the results of this community service activity demonstrate that the proposed e-learning system is well-received by users in a simulated environment. The combination of integrated features and positive usability evaluation suggests that the system has the potential to serve as a digital solution to support certification activities more efficiently and in a more structured manner.

The findings also emphasize the importance of user-centered evaluation in assessing the feasibility of digital solutions before full-scale implementation. By incorporating user feedback and usability metrics, the system can be further improved to better align with user needs and expectations in future applications.

CONCLUSION AND SUGGESTIONS

The results of this community service activity demonstrate that the proposed e-learning system is positively perceived by users when evaluated through a guided simulation approach. The usability assessment using the System Usability Scale (SUS) produced an average score of 71.13, which falls within the "acceptable" range with a Grade C rating and an "OK" adjective classification. This indicates that the system meets fundamental usability requirements and is considered sufficiently easy to use by participants with prior experience in Hajj guide certification activities. The integration of key features, including material access, online examination, document verification, and digital certification, contributes to a more structured, centralized digital solution than fragmented conventional practices.

From a community service perspective, the activity achieved an initial level of success by involving 23 certified Hajj guides, providing direct experience with an integrated digital certification workflow, and encouraging participants to contribute

feedback for system improvement. The achievement of the activity was reflected in the relevance of the beneficiaries, their participation in the guided simulation, the acceptable SUS score, and the practical recommendations generated during the evaluation. However, because no pretest–posttest assessment or standardized digital literacy measurement was conducted, the activity cannot claim a measurable increase in participant knowledge or digital literacy. The outcomes should therefore be interpreted as evidence of practical exposure, initial digital readiness, usability acceptance, and participant involvement.

Despite these encouraging results, several usability aspects still require improvement to enhance the overall user experience. Feedback from participants highlights the need for clearer navigation structures, more intuitive interface layouts, and improved interaction flow across system features. These findings suggest that while the system is functionally adequate, refinement is necessary to achieve higher usability standards and user satisfaction. The evaluation also confirms the importance of user-centered approaches in assessing digital solutions, particularly in contexts where systems are introduced as potential alternatives rather than fully implemented platforms.

Based on the findings, it is recommended that future activities focus on iterative system refinement by incorporating user feedback into the interface and functionality improvements. Further evaluation with a larger, more diverse group of users is also necessary to strengthen the generalizability of the results. In addition, subsequent community service initiatives may consider implementing the system in real training environments to assess its effectiveness in actual operational settings. Such efforts would provide deeper insights into the system's impact and support its development into a more robust, scalable digital solution for Hajj guide certification activities.

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