TheRêst: An Artificial Intelligence-Based Application for Digital Transformation of Qur'anic Understanding through Adaptive Tafsir and Thematic Sermons

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ABSTRACT
The rapid advancement of digital technology and the internet has created significant opportunities for the development of Islamic applications, particularly in understanding the Qur'an through tafsir. Yet, most existing applications remain passive, offering limited interactivity and contextual adaptation. This study introduces TheRêst, an AI-based Qur'anic application that employs Natural Language Processing (NLP) to summarize tafsir, generate thematic sermon outlines, and analyze sermon quality. The application was developed using Agile Development, which enabled iterative design, short development cycles, and continuous feedback. Functional accuracy was verified through black-box testing, while usability was assessed using the System Usability Scale (SUS). Twenty participants—including preachers, Islamic studies students, and general Muslim users—tested the system and provided feedback. Results indicated that the core features worked as intended, although response latency and summary accuracy require further optimization. The SUS evaluation produced an average score of 79.25, which falls into the "Excellent" (Grade A) category, demonstrating strong usability and acceptance. Participants also noted the practical benefits of AI-generated content in supporting sermon preparation and enhancing Qur'anic learning. Overall, the findings suggest that TheRêst holds substantial potential as a digital assistant for adaptive tafsir exploration and thematic da'wah preparation, thereby contributing to the ongoing digital transformation of Islamic education.

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1. INTRODUCTION

The advancement of digital technology and the internet has drastically transformed the way Indonesian society accesses and consumes information. By 2024, internet penetration had reached 79.5%, encompassing approximately 221.5 million users. Meanwhile, the number of active smartphone users stood at 209.3 million, with an average daily usage of internet-connected devices reaching 7 hours and 38 minutes (Business of Apps, 2025; Celios, 2024). This high level of digital literacy presents a highly conducive ecosystem for the development of Islamic content, particularly interactive and contextual Qur'an applications.

As the country with the largest Muslim population in the world—87.37% of the total population, or around 248 million people (Dukcapil, 2025)—Indonesia demonstrates a substantial demand for digital tools that facilitate a deeper understanding of the Qur'an. However, most Qur'an applications currently available remain largely passive and static, functioning merely as digitized versions of tafsir texts without offering pedagogical innovation or personalized approaches. In fact, tafsir studies are a crucial component in achieving accurate and contextual interpretations of Qur'anic verses (Shihab, 2018), while also preventing potential misinterpretations of Islamic teachings.

Within this context of both opportunity and challenge, preachers, as the primary agents of da'wah, encounter significant obstacles. First, limited time and accessibility often hinder their ability to study comprehensive and authoritative tafsir works. Second, sermon preparation is still highly time-consuming, involving stages such as research, structural organization, and the selection of appropriate references. Third, the process of analyzing sermons to maintain relevance to contemporary issues and audience needs is often carried out intuitively—or, in some cases, scarcely undertaken at all—particularly with respect to the use of systematic thematic analysis tools.

The application of artificial intelligence (AI) in Islamic education has shown considerable potential in recent years. Technologies such as Natural Language Processing (NLP) make it possible to automatically summarize tafsir texts, generate thematic sermon materials, and provide adaptive content that matches users' levels of understanding (Surianto, Kadir, Syafaat, Fakhri, & Rifqie, 2022; Arnadi, Aslan, & Vandika, 2024). Responding to these opportunities and addressing the limitations of existing platforms, TheRêst was developed as an AI-based digital solution designed to enhance Qur'anic comprehension and strengthen da'wah practices. Through the integration of NLP and intelligent recommendation systems, TheRêst not only supports independent tafsir learning but also assists preachers in preparing thematic sermons, evaluating draft materials, and receiving automated feedback along with

indicative scoring. Additionally, its community features allow users to share and access popular sermon drafts, fostering collaboration and knowledge exchange. With these capabilities, TheRêst is positioned to make a meaningful contribution to the Muslim community by promoting deeper engagement with the Qur'an and encouraging more reflective, informed, and contextually relevant da'wah in addressing contemporary challenges.

2. RESEARCH FRAMEWORK

2.1 Artificial Intelligence in Education

The integration of artificial intelligence (AI) in education has gained significant attention over the past decade. AI technologies, particularly Natural Language Processing (NLP), have been widely applied to enhance personalized learning, automate content generation, and provide adaptive feedback to learners (Holmes et al., 2019; Bakarat et al., 2022). Continuous usability evaluation and user-centered design are critical for ensuring that AI-based applications remain effective and accessible (Yasykur & Efrilianda, 2024). Studies consistently highlight that iterative improvements, informed by usability testing methods such as the System Usability Scale (SUS), can significantly enhance user acceptance and satisfaction (Samsudin et al., 2024).

2.2 Digital Islamic Education Platforms

In the context of Islamic education, digital platforms have become increasingly important tools for supporting Qur'an study and da'wah activities. Several Qur'an applications, such as Quran.com and Tarteel.ai, have provided users with access to recitations, translations, and tafsir. However, these applications often remain limited to static content presentation and lack features that enable deeper contextual understanding or pedagogical innovation (Shihab, 2018; Huda et al., 2024). Previous evaluations of Islamic learning applications demonstrate generally positive usability outcomes, yet they also reveal gaps in interactivity and contextual adaptability (Samsudin et al., 2024).

2.3 Usability and Human-Centered Design Approaches

Usability is a central determinant of the success of educational applications. Research on Islamic and non-Islamic digital platforms alike shows that systems scoring above 70 on the SUS are generally perceived as acceptable, while scores above 80 indicate excellent user experience (Brooke, 1996; Tullis & Stetson, 2004). For instance, usability studies of Islamic learning applications have reported scores in the "Good" to "Excellent" range, but often recommend interface refinements and content restructuring for improved learning engagement (Samsudin et al., 2024). Similarly, the

application of human-centered design has been shown to significantly enhance user satisfaction and system efficiency (Yasykur & Efrilianda, 2024).

2.4 Agile Development in Educational Applications Memorability

Agile Development has emerged as a widely adopted methodology for software projects that demand flexibility, rapid prototyping, and continuous user feedback. Unlike traditional waterfall approaches, Agile emphasizes iterative development through short sprints, stakeholder collaboration, and adaptability to change (Beck et al., 2001; Schwaber & Sutherland, 2020). Studies in educational technology highlight that Agile accelerates the delivery of functional features while ensuring alignment with user needs (Huda et al., 2025). In the context of Islamic educational applications, Agile provides a suitable framework for integrating innovative features such as AI-driven tafsir summarization, sermon generation, and text analysis. By embedding usability testing (e.g., SUS) into each sprint, Agile ensures that applications evolve based on real-world feedback, thereby improving pedagogical effectiveness and user engagement.

2.5 Research Gap Errors

While prior studies have examined usability and effectiveness of Islamic learning platforms, little attention has been paid to the integration of AI-driven features such as tafsir summarization, thematic sermon generation, and sermon text analysis. Existing applications largely serve as digitized repositories rather than intelligent assistants. This study addresses this gap by evaluating TheRêst, an AI-based Qur'an application developed using Agile methodology and incorporating adaptive tafsir alongside thematic sermon recommendations.

3. RESEARCH METHODS

The methodological approach of this study was designed to ensure that the development of TheRêst not only met technical specifications but also aligned with user needs and usability standards. Considering the dynamic requirements of educational applications and the necessity of user-centered design, the study adopted a research and development (R&D) framework to develop and evaluate TheRêst, an AI-based Qur'an application that integrates adaptive tafsir and thematic sermon recommendations. The Agile Development methodology was employed for application design and implementation, while usability evaluation was conducted using the System Usability Scale (SUS). This combination allowed the application to be developed iteratively, refined through continuous feedback, and objectively evaluated for user acceptance.

3.1 Agile Development Approach

The development of *TheRêst* followed the Agile framework, which emphasizes incremental progress through short, iterative cycles known as sprints. The process consisted of several stages that were repeated and refined throughout the project. The planning stage focused on defining project objectives, analyzing market feasibility, and

identifying user requirements to guide the backlog. The design stage translated these requirements into system and user interface designs, including use case diagrams, class diagrams, ERD, and prototype layouts. The development stage implemented application features incrementally, supported by the chosen technology stack to ensure functionality and scalability. Once features were developed, testing was conducted to validate both functionality and performance, ensuring that outputs met technical standards and user expectations. Finally, the review and evaluation stage integrated user feedback and refined the system, allowing continuous improvement and ensuring contextual relevance of the application. The overall process of these Agile stages is illustrated in **Figure 1**.

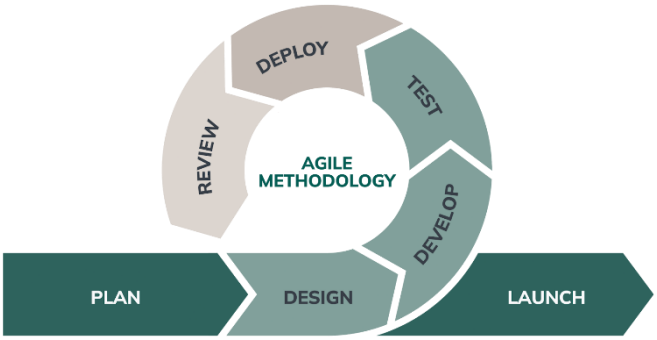

Figure 1. Agile Method Flow.

3.2 Usability Testing with System Usability Scale (SUS)

The usability of *TheRêst* was evaluated using the **System Usability Scale (SUS)**, a ten-item questionnaire developed by Brooke (1996). SUS was chosen because of its reliability, efficiency, and widespread use in assessing user satisfaction and acceptance in both general and educational applications. In this study, a sample of target users—including preachers, Islamic studies students, and general Muslim users—were asked to interact with the core features of the application, such as tafsir summarization, sermon generation, and text analysis. After completing these tasks, participants filled in the SUS questionnaire.

The SUS instrument consists of 10 items rated on a five-point Likert scale ranging from **1 = strongly disagree to 5 = strongly agree**. The instrument questions are presented in **Table 1.**

Table 1. The instrument questions

Code	Questions
Q1	Saya rasa, saya akan sering menggunakan aplikasi ini
Q2	Menurut saya, aplikasi ini terlalu rumit
Q3	Menurut saya, aplikasi ini mudah digunakan
Q4	Saya rasa, saya butuh bantuan teknis untuk bisa menggunakan aplikasi ini

Q5	Menurut saya, berbagai fitur di aplikasi ini terintegrasi dengan baik
Q6	Menurut saya, ada terlalu banyak hal yang tidak konsisten di aplikasi ini
Q7	Saya dapat membayangkan bahwa sebagian besar orang akan belajar menggunakan aplikasi ini dengan sangat cepat
Q8	Menurut saya, aplikasi ini sangat merepotkan untuk digunakan
Q9	Saya merasa sangat percaya diri saat menggunakan aplikasi ini
Q10	Saya perlu mempelajari banyak hal terlebih dahulu sebelum saya bisa menggunakan aplikasi ini

$$Score\ (Odd\ items) = (Response - 1) \quad (1)$$

$$Score\ (Even\ items) = (5 - Response) \quad (2)$$

$$Total\ SUS\ Score\ (per\ participant) = (\sum_{1=1}^{10} Score_i) \times 2.5 \quad (3)$$

$$Average\ SUS\ Score = \frac{Total\ Score\ of\ All\ Paticipants}{Number\ of\ Participant} \quad (4)$$

Responses were processed according to the standard SUS calculation procedure. Each item's score contribution ranged from 0 to 4, which were then summed and multiplied by 2.5 to yield a final score between 0 and 100. The scoring method is illustrated in **Figure 2**.

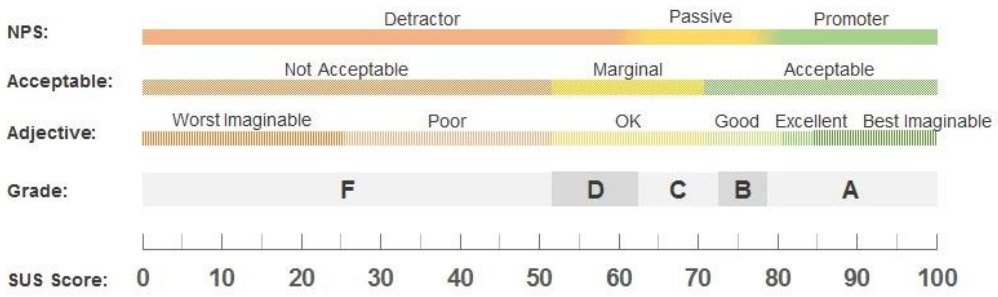

Figure 2. Score Testing System of Usability Scale

In line with established benchmarks, scores above 70 were considered acceptable, while scores above 80 were categorized as "Excellent" (Tullis & Stetson, 2004).

4. RESULTS AND DISCUSSION

4.1 Product Planning

The planning stage focused on aligning the development of *TheRêst* with both market feasibility and user requirements. Two complementary approaches were employed, a **market analysis framework (TAM–SAM–SOM)** to define potential adoption and a **requirement analysis** to identify the essential features of the application.

4.1.1 Market Analysis With TAM-SAM-SOM

The Total Addressable Market (TAM) represents the broadest potential audience for Qur'an-based digital applications. The Serviceable Available Market (SAM) narrows this to users actively engaged in Islamic education and da'wah activities, while the Serviceable Obtainable Market (SOM) defines the realistic segment that can be reached by TheRêst in the short to medium term.

The primary target market consists of Muslims who own smartphones and have internet access, with a particular emphasis on individuals actively involved in religious activities, especially da'wah. This group includes preachers, Islamic boarding school students (santri), university students, religious teachers, ustadz/ustadzah, and the general Muslim community seeking a deeper understanding of the Qur'an through tafsir, as well as those aiming to improve their preaching abilities. The TAM, SAM, and SOM framework was employed to identify these user segments in greater detail. The results of this analysis are presented in Table 2.

Table 2. Market Analysis of *TheRêst* Using TAM–SAM–SOM.

Focus	Description	Data/Indicators
TAM	The total market that could be served by *TheRêst* if there were no geographical or capacity constraints.	- Muslim population in Indonesia: ~87.09% of total population (2024) - Internet users in Indonesia: 185.3 million (Jan 2024) - Internet penetration: 66.5% (early 2024) - Global smartphone users: >7 billion (2024) - Android market share in Indonesia: 92.06% (June 2025)
SAM	The segment of the market that can realistically be reached by *TheRêst* using existing business models and technology.	- Muslim internet users from Indonesia's 185.3 million total internet users
SOM	The portion of the SAM that *TheRêst* can realistically capture	- Initial focus on communities such as preachers, santri, university students,

	within a certain timeframe, considering marketing strategy, resources, and competition.	pesantren, da'wah organizations, and individuals actively seeking innovative solutions for da'wah and Qur'anic study

4.1.2 Requirement Analysis

Based on the identified user needs and system objectives, the requirements for TheRêst were classified into functional and non-functional categories. The functional requirements focus on the core features needed to support Qur'anic learning and sermon preparation, while the non-functional requirements emphasize usability, performance, scalability, security, and compatibility. A detailed summary of these requirements is presented in Table 3.

Table 3. Requirement Analysis of *TheRêst*

Category	Requirement	Explanation
Functional	AI-powered summarization of tafsir texts	Provides concise interpretations for easier understanding.
	Automatic generation of thematic sermon outlines	Assists preachers in preparing structured sermons efficiently.
	Text analysis for relevance and contextual interpretation	Ensures content remains accurate and contextually meaningful.
	User authentication and profile management	Secures access and personalizes user experience.
	Navigation features to browse surahs, verses, and tafsir	Enables quick access to Qur'an and related tafsir.
	Database management for Qur'an, tafsir, and sermon content	Stores and organizes application content systematically.
Non-Functional	Usability – simple, intuitive interface	Optimized for Muslim users with clear, user-friendly design.
	Performance – AI response time ≤ 3 seconds	Ensures fast system performance and responsiveness.
	Scalability – support for increasing numbers of users	Maintains stability as the user base grows.
	Security – protection of user data and content integrity	Safeguards sensitive user information and Islamic resources.

Compatibility – cross-platform support (Android/iOS) via React Native	Ensures accessibility across different devices.

4.2 Design

The design stage translated the identified requirements into system representations and user-centered prototypes. This process ensured that both the technical architecture and user experience were aligned with the application's objectives. Several design activities were carried out as follows:

4.2.1 Use Case Diagram

A use case diagram was developed to illustrate the interactions between users (preachers, students, and general users) and the system. It outlines the main functionalities, including tafsir summarization, sermon generation, and text analysis (see Figure 3).

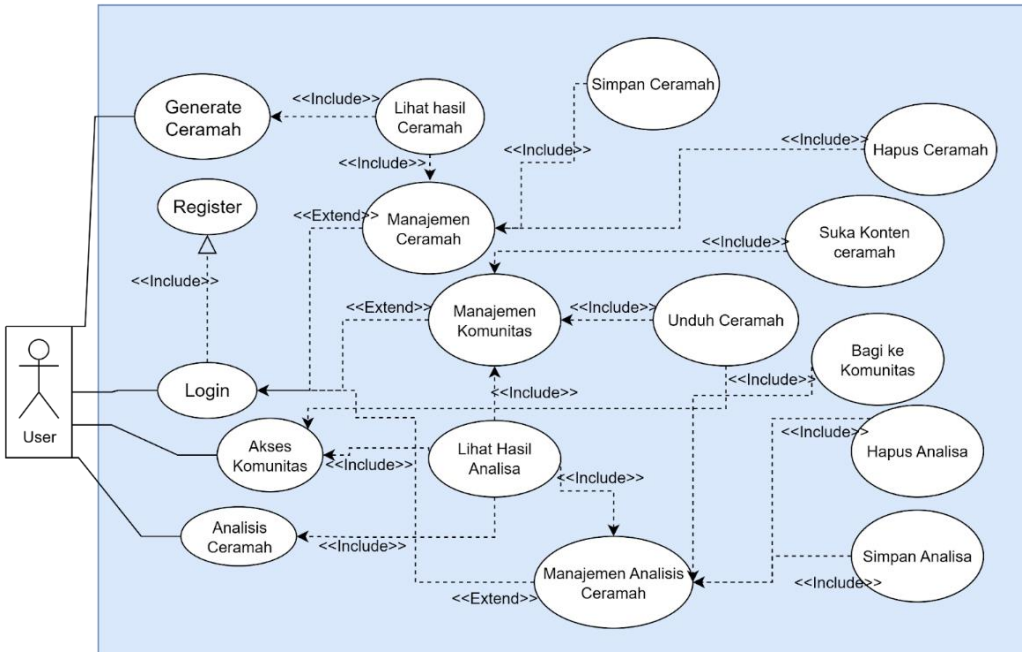

Figure 3. Use Case Diagram of *TheRêst.*

4.2.2 Class Diagram

A class diagram was created to describe the system's structure, including classes, attributes, methods, and relationships. This diagram served as a blueprint for organizing the application into modular and maintainable components (see Figure 4).

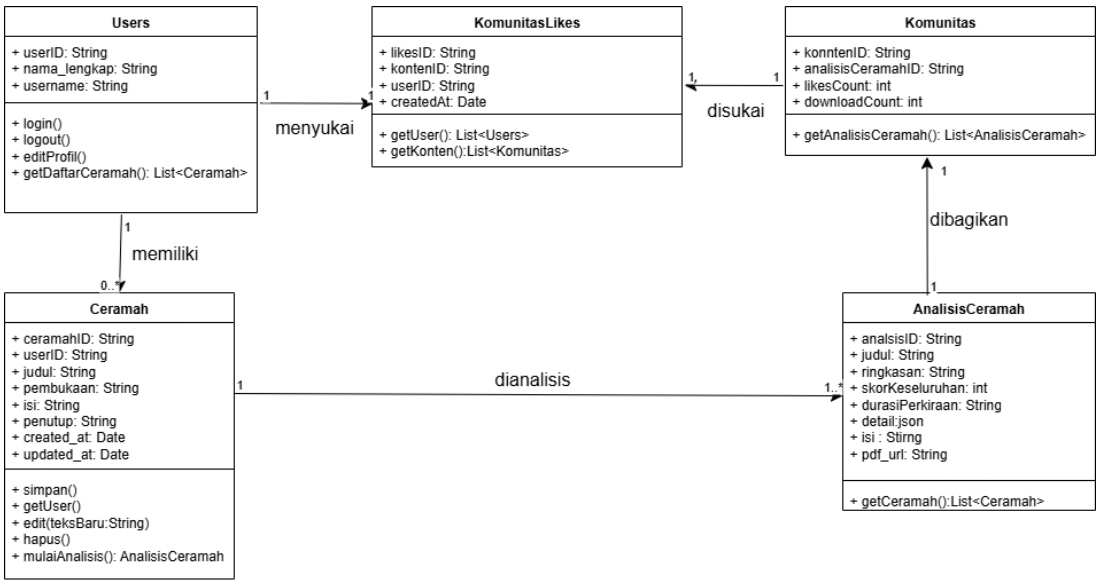

Figure 4. Class Diagram of *TheRêst.*

4.2.3 Entity Relationship Diagram

The ERD was designed to model the database structure of *TheRêst*. Entities such as *Users, Surahs, Tafsir, Sermon Materials,* and *AI Outputs* were defined along with their relationships, ensuring that the database supported scalability and efficient data retrieval (see Figure 5).

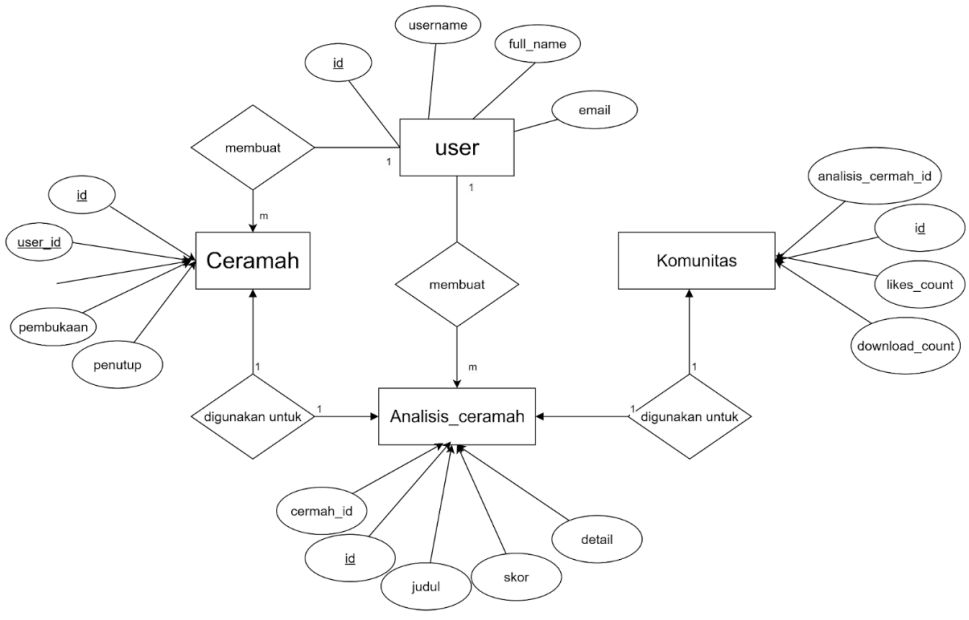

Figure 5. Entity Relationship of *TheRêst*.

4.2.4 Application Design (User Interface)

A visual prototype of the application was created using Figma. The UI design emphasized readability of Arabic text, smooth navigation between features, and user-friendly

interaction for sermon preparation. A sample of the application interface design is shown in Figure 6.

Figure 6. User Interface Design of *TheRêst*

All design artifacts were reviewed with stakeholders to ensure technical feasibility and user-centered alignment before proceeding to the development stage.

4.3 Development

The development stage focused on implementing the planned features through an incremental and iterative process following the Agile sprint cycle. Each sprint delivered specific modules, beginning with core navigation and authentication, followed by AI-powered tafsir summarization, thematic sermon generation, and text analysis. To ensure efficiency and scalability, a combination of frontend, backend, and AI services was employed. React Native was selected for cross-platform mobile development, Supabase for backend data management, and the Google AI/Gemini API for natural language processing tasks. The complete technology stack used in the development of TheRêst is summarized in Table 4.

Table 4. Technology Stack of *TheRêst*.

Layer	Technology/Tool	Purpose
Frontend	React Native	Cross-platform mobile development (Android/iOS)
Backend	Supabase	Database, authentication, and API services

AI/NLP	Google AI/ Gemin API	Text summarization and thematic sermon generation
Design	Figma	UI/UX prototyping and wireframing
Testing	Black-box Testing, SUS	Functional and usability evaluation

4.4 Testing

Testing was carried out using **black-box testing techniques** to validate system functionality and ensure that AI-generated outputs were accurate and contextually relevant. Each feature was tested by providing input and observing the corresponding output without examining the underlying source code. Errors and limitations identified at this stage were logged for refinement in subsequent iterations. The results of the black-box testing are summarized in **Table 5**.

Table 5. Black-box Testing Results of *TheRêst*.

Test Code	Featured Tested	Input	Expected Output	Actual Output	Result
TC-01	User Authentication	Valid username and password	User successfully logged in	Succes	Pass
TC-02	User Authentication	Invalid password	Error message displayed	Error displayed	Pass
TC-03	Tafsir Summarization (AI)	Select Surah and Ayah	Concise tafsir summary displayed	Summary displayed	Pass
TC-04	Thematic Sermon Generation (AI)	Input Theme:college	Sermon outline relevant to "college" generated	Outline generated	Pass
TC-05	Text Analysis	Input sermon text	System highlights relevant Qur'anic verses and tafsir	Highlighted text	Pass
TC-06	Navigation Surah (Browser)	Select Surah Al-Fatihah	Display Surah with verses and tafsir	Display correct	Pass

4.5 Usability Testing with System Usability Scale (SUS)

The usability evaluation of *TheRêst* was conducted using the **System Usability Scale (SUS)**, which consists of ten standardized items (see Table X in the Method section). A

total of *N* respondents, including preachers, Islamic studies students, and general Muslim users, participated in the testing. Each respondent interacted with the main features of the application—such as tafsir summarization, sermon generation, text analysis, and navigation—before completing the SUS questionnaire.

The responses were processed using the standard SUS scoring method, where individual item scores were adjusted (odd-numbered items: score – 1, even-numbered items: 5 – score), summed, and multiplied by 2.5 to yield a score ranging from 0 to 100. The results of the calculation are summarized in **Table 6**.

Table 6. SUS Results of *TheRêst*.

Participate Code	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Score SUS
P-01	4	1	5	1	5	1	5	1	4	1	95ti
P-02	4	3	4	3	3	3	4	3	4	4	57,5
P-03	5	1	5	2	5	1	5	1	5	2	95
P-04	5	1	5	2	5	1	5	1	5	2	95
P-05	5	1	5	2	5	1	5	1	5	2	95
P-06	3	2	4	3	3	2	4	2	4	3	65
P-07	4	2	5	4	5	2	5	1	5	2	82,5
P-08	3	3	5	5	4	1	5	5	4	4	57,5
P-09	5	5	5	5	4	3	4	1	5	2	67,5
P-10	4	2	4	1	5	1	4	1	5	4	82,5
P-11	4	2	4	2	4	2	4	2	4	2	75
P-12	4	2	4	2	4	2	4	2	4	2	75
P-13	4	2	4	2	5	3	5	1	4	3	77,5
P-14	4	2	4	2	5	3	4	2	5	1	80
P-15	3	1	5	4	4	3	4	2	3	5	62,5
P-16	5	2	5	2	5	1	5	1	5	1	95
P-17	5	2	4	2	4	1	4	2	5	1	85
P-18	4	2	5	2	4	2	3	2	4	2	75
P-19	3	1	5	3	5	1	5	1	5	1	90
P-20	5	1	5	5	5	2	5	1	5	5	77,5
Score Total											**1585**

$$Average\ SUS\ Score = \frac{1585}{20} = 79{,}25$$

The analysis shows that *TheRêst* achieved an average SUS score of **79.25**, which falls into the **"Excellent" (Grade A)** category according to the SUS benchmark scale (Bangor et al., 2009). This indicates that users found the application to be both usable and satisfying in terms of design and interaction.

Qualitative feedback collected during the evaluation further supported the quantitative results. Users highlighted the clarity of the interface, the usefulness of AI-generated summaries and sermon recommendations, and the overall ease of navigation. However, several participants also noted that the AI response time could be improved, particularly when generating longer sermon outlines.

These findings are consistent with previous studies that emphasize the importance of iterative usability evaluation in educational technology applications (Samsudin et al., 2024; Yasykur & Efrilianda, 2024). The high usability score confirms that the Agile-based development process was effective in producing a system that aligns with user expectations, while the identified limitations provide direction for future refinement.

5. CONCLUSION

Based on the development and evaluation processes conducted, it can be concluded that TheRêst has been successfully developed as an innovative solution to address the demand for an intelligent and interactive Qur'an platform. The application effectively fills a gap in the market by providing AI-based features such as tafsir summarization, sermon generation, and text analysis, which are not yet available in comparable applications.

The usability testing results indicate a very high level of user acceptance, as reflected in an average SUS score of 79.25, which falls into the "Excellent" category (Grade A). This outcome affirms that the application's interface design and user experience have been implemented successfully. However, functional testing identified the need for further optimization of AI-based features, particularly in terms of response speed and accuracy.

These findings are consistent with previous studies that emphasize the importance of continuous usability evaluation and iterative improvement in educational applications (Samsudin et al., 2024; Yasykur & Efrilianda, 2024). Accordingly, this research contributes to the growing body of knowledge on the application of artificial intelligence in Islamic education by demonstrating how adaptive tafsir and thematic sermon recommendations can be effectively integrated into a digital platform (Surianto et al., 2022; Arnadi, Aslan, & Vandika, 2024).

Future development will therefore focus on refining AI models and incorporating collaborative features to strengthen the ecosystem of Islamic preaching

and education in the digital era. In this regard, TheRêst not only serves as a technological innovation but also as a scholarly contribution, providing a model for the design of AI-driven religious education tools that are pedagogically sound, contextually relevant, and user-centered.

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