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USER EXPERIENCE EVALUATION OF THE WALI SANTRI-EPESANTREN APPLICATION USING THE HEART FRAMEWORK

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Abstract. The Wali Santri-ePesantren application has become an important communication platform that connects Islamic boarding schools (Pesantren) with students' parents. Although the application supports the exchange of academic and administrative information, users continue to report technical problems and interface limitations that affect their overall experience. This study assesses the application's user experience (UX) using the HEART Framework and develops recommendations for improvement based on the evaluation results. The research employed a descriptive quantitative approach supported by qualitative data. Responses were collected from 100 active users through a Likert-scale questionnaire and open-ended questions, and the results were analyzed using the Level of Usability (LoU) classification. Overall, the application achieved a good level of user experience. Engagement (76%), Adoption (77%), and Retention (80%) exceeded the predefined target, whereas Happiness (67%) and Task Success (68%) remained below the expected threshold of 70%. The qualitative findings identified several recurring concerns, including an unattractive interface, text that was difficult to read because of its small size, unexpected application crashes, and login failures. These findings suggest that improvements should focus on refining the visual interface, enhancing the backend authentication process, and introducing real-time notifications to improve system reliability and user satisfaction.

Keywords: user experience, HEART Framework, ePesantren, evaluation, mobile application

INTRODUCTION

The continuous growth of information and communication technology has reshaped many aspects of society, including the education sector. In response to these developments, Islamic boarding schools (Pondok Pesantren) have gradually incorporated digital technologies into their daily activities to support educational and administrative processes (Samsudin et al., 2024). One of the changes can be seen in the adoption of mobile-based information systems designed to improve communication and services for students' guardians (Islami & Firmansyah, 2024). Among these innovations is the Wali Santri-ePesantren application, developed by Indoweb.id, which allows parents to monitor their children's academic progress and administrative information in a transparent and real-time manner (epesantren, 2025).

Despite its practical benefits, the application has not been free from usability concerns. User experience (UX) describes the perceptions, emotions, and responses that emerge when individuals interact with a digital product or service, covering aspects such as usability, convenience, and overall satisfaction (Hilmawan & F, 2020). A preliminary examination of user reviews posted on the application's distribution platform revealed several recurring problems. Users frequently reported "Unauthorized" messages during login despite entering valid credentials, unexpected application crashes while using the system, and an interface that many considered visually unattractive.

Because the Wali Santri-ePesantren application functions as the primary communication and administrative link between Islamic boarding schools and students' guardians, maintaining a positive user experience is essential. Poor usability can interrupt information exchange and may

gradually reduce parents' confidence in the digital services offered by the boarding school (Wisesa, 2021). This issue becomes even more important because parents have diverse levels of digital literacy. An application intended for everyday use should therefore remain accessible, reliable, and easy to operate for users with different technological backgrounds. To evaluate these aspects, this study employs Google's HEART Framework as the main evaluation approach. The framework assesses user experience through five complementary dimensions—Happiness, Engagement, Adoption, Retention, and Task Success—allowing a comprehensive assessment of a digital product from the users' perspective (Trenggono et al., 2022).

The HEART Framework has been adopted in a variety of previous studies, although the contexts and research objectives have differed. (Cory Zarkasi & Sari Wardani, 2022), for example, evaluated the features of the Zenius educational platform, whereas (Kurniawan et al., 2024) and (Rismawan & Suparni, 2025) applied the same framework to the Dana digital wallet and the Shopee e-commerce platform, respectively. These studies demonstrate that the HEART Framework is sufficiently flexible to evaluate different types of digital services. Nevertheless, most of the existing research emphasizes quantitative measurement while offering only limited discussion of the factors behind users' evaluations. This limitation provides the motivation for the present study. Rather than relying exclusively on numerical scores, this research combines HEART-based quantitative evaluation with qualitative evidence collected through open-ended questions. Integrating these two sources of data makes it possible to obtain a more detailed understanding of users' experiences with the Wali Santri-ePesantren application and to formulate improvement strategies that directly address the issues encountered by users. Furthermore, this study expands the application of the HEART Framework within the context of digital services in Islamic boarding schools, thereby contributing to the growing body of user experience research (Sucipto et al., 2022).

RESEARCH METHODS

Type of research

This study is a descriptive quantitative study supported by a qualitative approach, aimed at analyzing the user experience of the Wali Santri-ePesantren application. The evaluation was conducted using the HEART Framework method, which consists of five main variables: Happiness (user satisfaction), Engagement, Adoption (ease of initial use), Retention (willingness to use again), and Task Success (success in completing tasks) (Agustin et al., 2025). This research was conducted at the Indoweb.id office in Kediri, the application's developer.

Population and sample

The target population of this study consists of parents of students who are active users of the Wali Santri-ePesantren app at the Queen Al Falah Ploso Islamic Boarding School and the An-Nuur Lamongan Islamic Boarding School. Sampling was conducted using purposive sampling, with the criterion that respondents had used the app for at least one month. From an estimated total population of 500 people, the minimum sample size was calculated using the Slovin formula with an error tolerance of 10%. This error tolerance was chosen based on considerations of time, cost, and the researcher's available resources. This aligns with the statement by (Sugiyono, 2013) that the error margin in sample determination is flexible and can be adjusted according to the availability of resources and time available to the researcher. Furthermore, in social science research, a 10% error margin is still considered representative and methodologically acceptable. The sample size calculation is presented in Equation 1.

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

Where:
n : Number of samples required
N : Population size
e : The error tolerance used in the study

Based on calculations using that formula, the minimum sample size was determined to be 84 respondents. However, to ensure data quality, account for invalid questionnaires, and improve statistical accuracy, the researcher set a final target of 100 respondents.

Data collection

Data was collected through an online questionnaire distributed via Google Forms. The instrument was designed based on the five main variables of the HEART Framework. Before the items were formulated, Goal-Signal-Metrics (GSM) were established to determine the evaluation goal of the application (Goal), the expected user behavior signals (Signal), and the assessment metrics (Metrics) for each variable (Kristi et al., 2022). This questionnaire contains 20 closed-ended statements measured on a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), as well as two open-ended questions to explore specific user challenges.

Data analysis techniques

The collected questionnaire data was first assessed for suitability through validity testing to measure the instrument's accuracy and reliability testing to evaluate its reliability (Dhiannisa et al., 2024). Once the data was confirmed to be valid and reliable, quantitative analysis was conducted to generate percentage values for each variable (Ncriteria). The formula for calculating the variable score is shown in Equation 2 below.

$$Ncriteria = \frac{Ntotal}{Nmax} \times 100\% \quad (2)$$

Where :
$Ntotal$: The total score of all respondents' answers for the statements in each variable
$Nmax$: The maximum score is calculated as the maximum score per item × the number of items for each variable × the number of respondents

The percentage results were then classified using the Level of Usability (LoU) criteria, as shown in Table 1.

Table 1. Usability Criteria Levels[

Ncriteria	*Level of Usability*
80% - 100%	Very Good
60% - 79%	Good
40% - 59%	Fair
20% - 39%	Bad
0% - 19%	Very Bad

Source: (Rismawan & Suparni, 2025)

These LoU classification results are then combined with qualitative data from open-ended questions to identify priority recommendations for app improvements for developers.

RESULTS AND IMPLEMENTATION

Determining goals, signals, and metrics

The first step in this evaluation is to establish specific Goal-Signal-Metrics (GSM) targets to serve as guidelines for measuring the Wali Santri-ePesantren application. The GSM targets for each variable are presented in Table 2.

Table 2. Goal-Signal-Metrics Set

	Goal	Signal	Metrics
H	70% of app users have a positive impression of the Wali Santri-ePesantren app, finding it easy	Users are satisfied with the app's interface, find it easy to use, and	The measurement was conducted using a

	to use and comfortable to operate.	feel comfortable accessing its features.	questionnaire with a 1–5 Likert scale (SD-SA).
E	70% of active users use the app's features to obtain information about students.	Users find the app's features useful, easy to access, and helpful for monitoring students.	The measurement was conducted using a questionnaire with a 1–5 Likert scale (SD-SA).
A	70% of users can understand and use the app easily right from the start.	Users can quickly get the hang of the app and don't need much time to learn its features.	The measurement was conducted using a questionnaire with a 1–5 Likert scale (SD-SA).
R	70% of users are willing to continue using the app to monitor information about students.	Users find the app useful and continue to use it regularly to get information.	The measurement was conducted using a questionnaire with a 1–5 Likert scale (SD-SA).
T	70% of users were able to complete tasks on the app easily and without encountering any errors.	Users can easily navigate the menu, view information, and use the app's features without any difficulty.	The measurement was conducted using a questionnaire with a 1–5 Likert scale (SD-SA).

Research instruments

Based on the GSM framework in Table 2, 20 closed-ended questionnaire items were developed for the five HEART variables, which were measured using a Likert scale. The instrument is presented in Table 3.

Table 3. Research Instruments

	Statement
H1	Feeling comfortable using the Wali Santri-ePesantren app
H2	I like the app's design and colors
H3	I'm satisfied with the features in the app
H4	Suitable for use by the parents of boarding school students
E1	Frequently opening the app to check on my child
E2	Interested in trying out other features available in the app
E3	Comfortable using the app for long periods of time
E4	You can open the app anytime you need to
A1	Didn't have any trouble using the app for the first time
A2	The app's features are easy for parents to understand
A3	The instructions and information in the app are clear and helpful
A4	My initial experience using the app was easy and smooth
R1	I'll keep using the app because it's been helpful
R2	I plan to keep using the app in the future
R3	The app is considered essential for monitoring children at Islamic boarding schools
R4	It's more convenient to use the app than to ask the Islamic boarding school directly
T1	Information such as attendance, memorization, and bills is easy to find
T2	Rarely experiences glitches or errors when using the app
T3	The app helps with handling administrative matters related to children
T4	Pesantren services can be easily accessed through the app

In addition to the statements above, two open-ended questions were included to explore users' experiences and the challenges they encountered while using the app. The list of open-ended questions is shown in Table 4.

Table 4. Open-Ended Questions

	Open-Ended Questions
1	What difficulties have you encountered while using the Wali Santri app?
2	In your opinion, what needs to be improved to make the Wali Santri app easier to use?

Validity and Reliability Tests

Based on the validation and reliability testing of the questionnaire administered to 100 respondents, the validity test results indicate that all items in the research questionnaire are valid, as the calculated r-value for each item is greater than the critical r-value of 0.195. The questionnaire showed a Cronbach's Alpha coefficient of 0.921, indicating that the instrument had a high level of internal consistency.

Respondent characteristics

A total of 100 respondents participated in this study. Female respondents represented a slightly higher proportion of the sample (51%), while most participants were from Queen Al Falah Ploso Islamic Boarding School (60%). To provide a clearer overview of the respondent characteristics, the age distribution and duration of application use are presented in Figures 1 and 2.

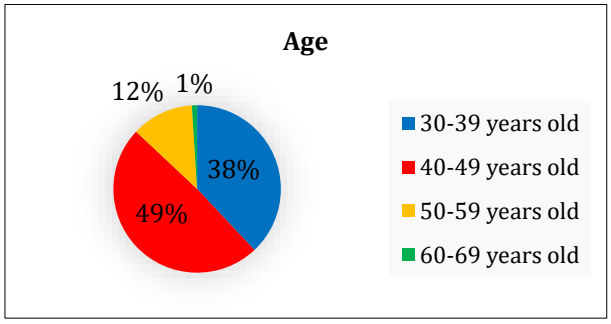


Figure 1. Age of Respondents

Figure 1 presents the age distribution of the respondents. Individuals aged 40–49 made up the largest proportion of the sample (49%), followed by those aged 30–39 (38%). Respondents aged 50–59 accounted for 12%, whereas only 1% were in the 60–69 age group.

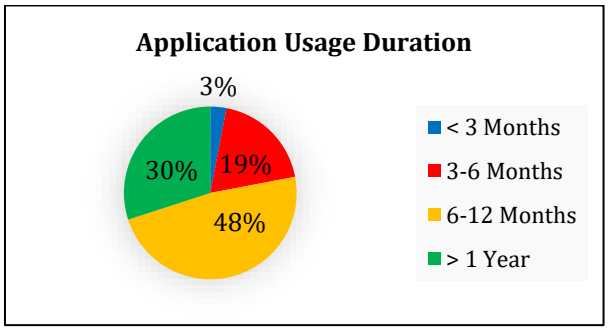


Figure 2. Duration of App Usage

Figure 2 presents the distribution of respondents based on the duration of application use. Nearly half of the respondents had used the application for 6–12 months (48%), followed by those who had used it for more than one year (30%). Respondents with 3–6 months of experience accounted for 19% of the sample, while only 3% had been using the application for less than three

months. Overall, the distribution indicates that most respondents had sufficient experience using the application before completing the evaluation.

Data analysis results

To facilitate comparison across the indicators and HEART Framework variables, the questionnaire results are presented in graphical form, as shown in Figures 3 and 4.

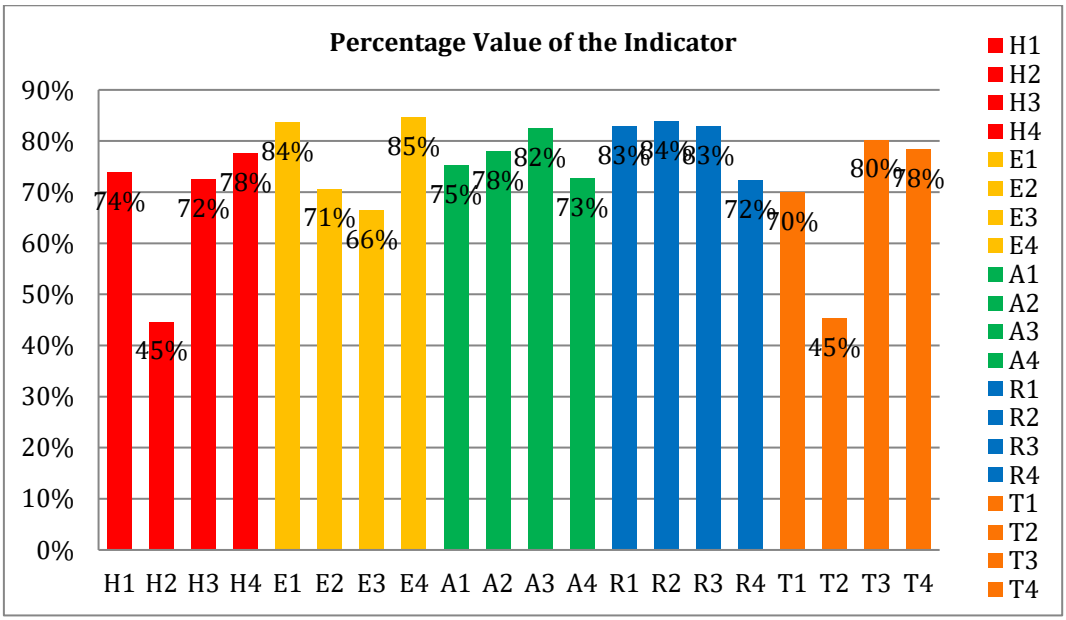


Figure 3. Graph Based on Indicator Value

Figure 3 presents the percentage scores for all 20 research indicators, providing an overview of users' evaluations across the HEART Framework. The scores varied across the indicators, with E4 receiving the highest percentage, indicating that users considered the application easy to access. In contrast, H2 and T2 recorded the lowest scores (45%), highlighting interface design and recurring system errors as the main issues experienced by users.

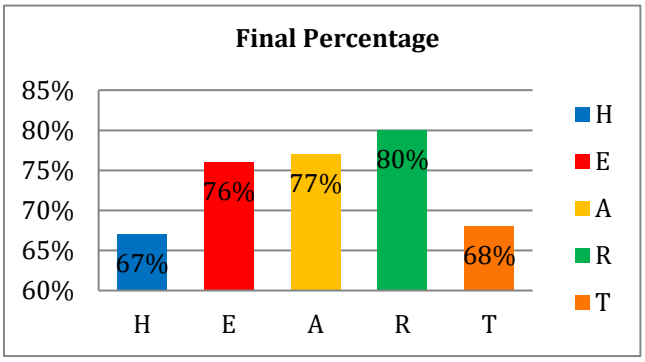


Figure 4. Graph Based on Final Results

Figure 4 presents the final percentage scores for the five HEART Framework dimensions. Retention achieved the highest score (80%), reflecting users' continued use of the application. By comparison, Happiness (67%) and Task Success (68%) did not reach the predefined target of 70%. Because these two dimensions recorded the lowest scores, they were identified as the main priorities for developing user experience improvement recommendations.

Discussion

The questionnaire data were analyzed using descriptive statistics, resulting in percentage scores for each HEART Framework variable. These values were then compared with the

predetermined target goal (70%) to determine the system's usability achievement level. The results of this comparison are presented in Table 5.

Table 5. Usability Level Results

Variable	Number of Statements	Max Value	Total Value	Percentage	Level of Usability	Conclusion
Happiness	4	2000	1342	67%	Good	Not Achieved
Engagement	4	2000	1526	76%	Good	Achieved
Adoption	4	2000	1541	77%	Good	Achieved
Retention	4	2000	1608	80%	Very Good	Achieved
Task Success	4	2000	1369	68%	Good	Not Achieved

Happiness received a score of 67%, indicating that user satisfaction with the app still needs to be improved. Based on the results of the indicator analysis, the lowest score was recorded for indicator H2, at 45%, which relates to user preference for the app's appearance and color scheme. This suggests that the app's user interface has not yet fully met user expectations.

Engagement reached a rate of 76%, indicating that users are quite active in using the app to access information about students. This figure has met the target goal, demonstrating that the app is quite effective at encouraging users to continue interacting with the system.

The adoption rate was 77%, indicating that the app is fairly easy to use and has been well-received by users. This suggests that most users had no trouble getting started with the app.

Retention scored 80%, the highest percentage among the other variables. This indicates that users tend to continue using the app on an ongoing basis to monitor students' activities and financial information.

Task Success achieved a score of 68%, indicating that users still face challenges in successfully completing tasks while using the app. Based on the indicator analysis, the lowest score was recorded for indicator T2, at 45%, which relates to the frequency of glitches or errors encountered while using the app.

Recommendations for improvement

Based on the analysis of the indicators and the responses to the open-ended questions in the questionnaire, several issues were identified that contribute to the low scores for the Happiness and Task Success variables. Analysis of the open-ended responses provided deeper insights into the technical difficulties and interface-related issues reported by users. Recommendations for improvements are presented in Table 6.

Table 6. Recommendations for Improvement

Variables/Indicators	Issues Identified	Recommendation for Improvement
Happiness H2 I like the app's design and colors	1. Users have complained that the app's interface is dull because the menu icons are too pale and faint, making them hard for the parents to see. 2. The text is too small to read.	1. Make the menu icons bolder by using a more distinct color, and add a shadow effect to the background of the icons so they stand out more and don't blend in with the white background.

	3. The menu buttons (such as Home, Info, and Account) are positioned too close to the bottom edge of the screen, making them difficult for users to reach and operate.	2. Increase the font size and enhance color contrast to make the information easier to read. 3. Add a bottom margin to the navigation menu (bottom navigation bar) so that the buttons aren't too close to the bottom of the screen, making them easier for users to reach and use.
Task Success T2 Rarely experiences glitches or errors when using the app	1. Users have reported that the app frequently closes on its own while in use, requiring them to log in again.	1. Extend the session duration so that users aren't automatically logged out and don't have to log in again too often. 2. Implement a logging system (Firebase Logging) to identify the exact cause of app crashes, making it easier for the development team to fix the issue.
	2. Login failure even though the code, ID number, and password were entered correctly.	1. The backend authentication mechanism should be enhanced to ensure more reliable verification of user access rights. In addition, removing expired authentication tokens can help minimize data conflicts when users log in again. 2. Synchronizing the central database and maintaining stable API server responses are recommended to ensure that parents' data can be retrieved correctly during the login process.
Addition of notification features	1. Users often find out about information late because they have to manually check the app to view transaction history or bills.	1. Implementing an automatic (real-time) notification feature can improve information delivery by notifying users whenever funds are withdrawn or new bills are generated.
Addition of additional information features	1. The lack of detailed information needed by parents to fully monitor their children's activities.	1. Adding the transaction time (hours and minutes) to the outgoing transaction history can provide users with more detailed information about each transaction. 2. Displaying students' daily spending limits can help parents monitor their children's daily expenses more effectively. 3. Providing a feature that allows parents to access students' report card grades can improve access to academic information through a single application.

	4. Providing the contact number of the responsible administrator can facilitate communication when users encounter technical or administrative issues.

As shown in Table 6, the main issues identified in the application were related to its visual design and system stability. Responses to the open-ended questions indicated that the low Happiness score was associated with an unattractive interface, overly pale color combinations, text that was too small to read, and navigation buttons that were difficult to access. Meanwhile, the low Task Success score was linked to recurring login failures and unexpected application crashes (force close).

In addition to these issues, respondents also expressed the need for automatic notifications and more detailed transaction information. Addressing the identified interface and technical issues, together with the addition of the requested features, is expected to improve system stability and provide a better user experience for students' guardians.

CONCLUSION

The evaluation conducted using the HEART Framework indicates that the overall user experience of the Wali Santri-ePesantren application falls within the good category. Among the five HEART dimensions, Engagement (76%), Adoption (77%), and Retention (80%) achieved the predefined targets, indicating that the application has been well accepted and is regularly used by students' guardians. In contrast, Happiness (67%) and Task Success (68%) did not reach the expected target, suggesting that system stability and visual interface quality remain the primary issues affecting the user experience. Based on these findings, improvements should focus on enhancing the user interface, resolving login failures and unexpected application crashes (force close), and implementing automatic (real-time) notification features. For future research, user experience evaluation should also involve the boarding school's administrative staff. Since the Wali Santri-ePesantren application functions as an information bridge whose data are managed through the ePesantren management system, evaluating the administrative users would help determine whether the technical issues experienced by students' guardians originate from the mobile application itself or from usability issues within the central management system. Such an approach is expected to support more comprehensive optimization of data integration between administrators and application users.

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