Khizanah al-Hikmah : Jurnal Ilmu Perpustakaan, Informasi, & Kearsipan
p-ISSN: 2354-9629
e-ISSN: 2549-1334
Volume 14 Issue 2, June, 2026

Evaluating User Experience of the Solok Membaca E-Book Application Using the User Experience Questionnaire (UEQ)

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Notes

Submitted: 28-02-2026
1st Revised: 23-03-2026
2nd Revise: 04-06-2026
Accepted: 06-06-2026

How to cite: Yoliadi, D. N., Roza, Y. M., & Vindi. (2026). Evaluating User Experience of the Solok Membaca E-Book Application Using the User Experience Questionnaire (UEQ). Khizanah Al-Hikmah : Jurnal Ilmu Perpustakaan, Informasi, Dan Kearsipan, 14(2). https://doi.org/10.24252/kah.v14i2a5

DOI: 10.24252/v14i2a5

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ABSTRACT

Background: Digital transformation has reshaped public library services, shifting access and engagement toward digital reading platforms. However, the sustainability of such initiatives depends not only on functionality but also on the quality of user experience (UX).
Purpose: The study evaluates the UX of the Solok Membaca e-book application using the User Experience Questionnaire (UEQ).
Methods: A quantitative evaluative design was employed, measuring six dimensions: attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. Reliability testing was conducted to confirm internal consistency across all scales.
Findings: Pragmatic quality dimensions (perspicuity, efficiency, and dependability) achieved moderate performance, reflecting functional adequacy. However, hedonic dimensions (stimulation and novelty) scored comparatively lower. Benchmarking analysis positioned the application below international UX standards, particularly in experiential attributes.
Originality/Value: This study advances digital library evaluation by integrating multidimensional UX constructs into public sector contexts, highlighting the strategic importance of experiential quality, beyond basic usability, in achieving meaningful and sustainable digital inclusion.

Keywords: User Experience (UX); User Experience Questionnaire (UEQ); Digital library; E-book application; Digital transformation

1. INTRODUCTION

Digital transformation has fundamentally reconfigured the landscape of library services worldwide. Public libraries are no longer confined to physical infrastructures but increasingly operate within digitally mediated ecosystems where access, interaction, and engagement occur through mobile applications and online platforms (Muthurasu & Suganthi, 2023; Singh

et al., 2022). In this evolving environment, e-book applications developed by public institutions function not merely as technological extensions, but as strategic infrastructures to enhance literacy inclusion, democratize information access, and promote lifelong learning (Amrina & Rahmi, 2024). However, the sustainability and effectiveness of such digital initiatives depend not solely on technological deployment, but on how users perceive, interpret, and experience these systems in real contexts of use (Khan, 2021).

Within the broader discourse of human computer interaction and information systems, the concept of user experience (UX) has evolved beyond traditional usability paradigms. While usability emphasizes task efficiency, effectiveness, and error minimization, UX encompasses users' holistic perceptions, including emotional responses, aesthetic appreciation, stimulation, trust, and perceived value (Berni & Borgianni, 2021; Corrêa et al., 2024). Experiential models in interaction design assert that users' cognitive and affective interpretations during and after interaction significantly influence continued usage intention, system acceptance, and long-term loyalty (Klapperich et al., n.d.; Yang et al., 2022). Consequently, evaluating UX has become a central concern in digital service design, particularly in voluntary use environments such as digital reading platforms, where engagement is driven more by intrinsic motivation than by institutional obligation (Hamera, 2025).

In digital library research, evaluation practices have historically prioritized service quality measurement, usability testing, and system performance indicators. Many frameworks concentrate on functionality, accessibility, and information retrieval efficiency. Although these dimensions are undeniably important, they primarily capture the pragmatic aspect of interaction (Lee, 2025; Zhang et al., 2025). Contemporary UX scholarship, however, emphasizes that hedonic qualities such as stimulation, novelty, and emotional engagement play an equally decisive role in shaping sustained user engagement. This distinction is especially relevant in e-book applications, where reading is not merely a transactional activity but an experiential and immersive process. A system that is functionally adequate but experientially uninspiring may fail to cultivate long-term reading commitment (Akdim et al., 2022; Liu et al., 2021).

Public sector digital reading platforms introduce additional layers of complexity. Unlike commercial e-book services driven by competitive market pressures and substantial investments in user centered design, government-based applications are typically developed to fulfill policy objectives, such as literacy promotion and equitable access to information (Djatmiko et al., 2025; Wang & Si, 2024). While socially significant, these initiatives may encounter constraints related to interface optimization, iterative design refinement, and systematic user feedback integration.

The implementation of mobile-based digital library services has increasingly become a strategy adopted by public libraries to expand community access to reading materials. In Indonesia, several regional libraries have begun developing mobile applications to support digital literacy programs and to provide easier access to electronic collections. One example is *the Solok Membaca* e-book application, developed by the Public Library and Archives Service of Solok City as part of its effort to promote reading culture and improve public access to digital information resources. The application enables users to browse, borrow, and read electronic books through their mobile devices. By providing remote access to digital collections, the platform is expected to support more flexible reading activities and broaden the reach of library services beyond physical library spaces. However, despite these intended benefits, initial observations indicate that the level of user engagement with the application is

still relatively limited. Several users have also reported difficulties related to system responsiveness, interface clarity, and the overall ease of navigating the application.

These conditions highlight the importance of examining how users actually perceive and experience the application when interacting with it. Evaluating user experience can provide valuable insights into the strengths and weaknesses of the system from the users' perspective. Such evaluation is essential not only for improving the usability and effectiveness of the application but also for ensuring that digital library services truly meet the needs and expectations of their users. As public libraries continue to embrace digital transformation, experiential quality emerges as a decisive factor in ensuring meaningful and sustainable user engagement (Lu & Lin, 2024). By systematically assessing the UX of *the Solok Membaca* application, this study contributes to theoretical refinement and practical advancement in the design of user centered public digital library services.

Although the User Experience Questionnaire (UEQ) has been extensively applied to evaluate e-learning systems, mobile commerce platforms, and enterprise software, its application in public-sector digital library environments remains limited. Studies on digital libraries have predominantly focused on usability metrics and service quality assessments, with relatively little attention given to the systematic examination of hedonic and experiential dimensions of user interaction (Makkan et al., 2020; Silveira, 2025). Furthermore, empirical studies on regional public e-book platforms in developing countries are underrepresented in the international Library and Information Science literature. This gap is particularly important because the sociotechnical characteristics of public library users, including variations in digital literacy, patterns of community engagement, and access to digital resources differ substantially from those observed in academic and commercial settings (Jiang et al., 2025).

From a theoretical perspective, incorporating user experience evaluation into digital public library research contributes to bridging the domains of Human–Computer Interaction and Library and Information Science. Prior research has demonstrated that experiential quality is closely associated with behavioral intention and continuance of system use, as proposed in established technology acceptance and continuance models. Nevertheless, empirical evidence regarding these experiential dimensions in local government-based digital reading platforms remains scarce. Addressing this gap therefore extends the understanding of how experiential constructs influence user engagement within policy-driven digital literacy initiatives (Kansara & Verma, 2025).

The present study evaluates the user experience of the Solok Membaca (*Solok Reading*) e-book application using the User Experience Questionnaire (UEQ). The study examines both the pragmatic and hedonic dimensions of user experience, assesses the application's overall attractiveness and benchmarking performance, and identifies areas requiring improvement based on empirical evidence. By employing a standardized and internationally validated instrument, this research provides a rigorous evaluation of user experience while generating contextually relevant insights for the enhancement

2. METHODS

This study employed a quantitative evaluative design with a cross-sectional survey approach to assess the user experience of *the Solok Membaca* e-book application. The research was positioned within an applied research framework, aiming to generate empirical evidence to support the improvement of public sector digital library services. The study focused on

measuring users' experiential perceptions at a single point in time after they had interacted with the application (Reyes et al., 2025).

The population consisted of active users of the *Solok Membaca* application managed by the Public Library of Solok City, a municipality located in West Sumatra Province, Indonesia. Given the voluntary nature of platform use, the accessible population was defined as 298 active users who had used the application within the previous three months. A purposive sampling technique was employed to ensure that respondents possessed sufficient experience with the application to provide reliable evaluative judgments. The inclusion criteria required respondents to be active users of the application, to have independently accessed and utilized its features, and to participate voluntarily in the study. The final sample comprised respondents who met these criteria and completed the questionnaire in its entirety (Gumasing et al., 2024). The formula used to determine the sample in this study is the Slovin formula, as follows:

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

Where:
n: Sample Size
N: Population Size
e: Critical Value 10% = 0.1 (Percentage of tolerable sampling error)

Based on this calculation, the sample size for this study is 10% of the population, resulting in 75 respondents.

Addressing these questions required a theoretically grounded and empirically robust evaluation framework (Islam et al., 2023). The UEQ offered a multidimensional measurement instrument capable of capturing both pragmatic and hedonic qualities of digital systems (Elined Eve et al., 2024). The UEQ assessed six dimensions attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty which collectively represent overall impression, clarity of use, task performance perception, reliability, motivational appeal, and perceived innovation (Farlian & Ridwansyah, 2023; Schankin et al., 2022). By distinguishing between pragmatic quality (perspicuity, efficiency, dependability) and hedonic quality (stimulation, novelty), the UEQ enabled comprehensive analysis beyond conventional usability scales. Furthermore, its benchmarking capability allows comparative interpretation within an international reference dataset, strengthening analytical rigor (Graser et al., 2024).

Data were collected using the UEQ, a standardized instrument designed to capture both pragmatic and hedonic quality dimensions of interactive systems (Melissourgos & Katsanos, 2025; Okuboyejo et al., 2025).

Table 1. Description of the User Experience Questionnaire (UEQ) Instrument

Aspect	Description
Instrument Name	User Experience Questionnaire (UEQ)
Purpose of Instrument	To evaluate the user experience of the *Solok Membaca E-Book application* from the perspective of users.
Dimensions Measured	The instrument measures six dimensions: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty.
Number of Items	The UEQ consists of 26 paired semantic differential items.
Measurement Scale	Each item is rated on a 7-point Likert-type scale ranging from −3 to +3, representing opposing adjective pairs.

Response Format	Respondents select a score between −3 and +3 that best reflects their perception between two contrasting attributes.
Questionnaire Adaptation	Prior to distribution, the questionnaire was linguistically adapted to ensure contextual clarity while maintaining the conceptual integrity of the original instrument.

Data collection was conducted online using a structured survey form distributed through official communication channels of the Public Library. Respondents were informed about the purpose of the study and assured of confidentiality and anonymity. Participation was entirely voluntary, and informed consent was obtained before questionnaire completion (Quaquebeke et al., 2022). The questionnaire distribution for this study successfully obtained 75 respondents over a period of more than 3 weeks (26 days), from December 23, 2025, to January 15, 2026.



Figure 1. UEQ Analytical Procedure Used in This Study

Data analysis followed the standard UEQ analytical procedure. Raw data were first screened for completeness and consistency. Descriptive statistical analysis was then performed to calculate mean scores for each of the six UEQ dimensions. Internal consistency reliability was examined using Cronbach's alpha to ensure measurement robustness. The results were subsequently interpreted using the UEQ benchmark dataset to determine the relative quality classification of each dimension (e.g., excellent, good, above average, below average, or poor). This benchmarking approach enabled comparative evaluation beyond absolute score interpretation (User Experience Questionnaire Handbook, n.d.).

3. RESULTS AND DISCUSSION

A total of 75 valid responses were collected from active users of the Solok Membaca e-book application. Respondents consisted of students (56%), university students (28%), and general community users (16%). The majority (62%) reported using the application more than three times per week, indicating moderate engagement levels. This profile suggests that the evaluation reflects perceptions from regular users rather than incidental visitors.

Descriptive Statistics of UEQ Dimensions

The evaluation employed the User Experience Questionnaire (UEQ) consisting of six dimensions: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty. Table 1 presents the mean scores and standard deviations.

Table 2. Mean Score of UEQ Dimensions

No	Dimension	Mean	Std. Dev.
1	Attractiveness	0.82	0.94
2	Perspicuity	0.76	0.88
3	Efficiency	0.69	0.91
4	Dependability	0.72	0.87
5	Stimulation	0.58	0.95
6	Novelty	0.41	0.98

All dimensions yielded positive mean values (>0), indicating that overall user perception is moderately positive. However, none of the dimensions exceeded the 1.0 threshold, which typically indicates strong positive evaluation in UEQ interpretation standards. Attractiveness obtained the highest mean score (0.82), reflecting a generally favorable overall impression. Conversely, Novelty recorded the lowest score (0.41), suggesting limited perception of innovation or creativity in the interface design.

Pragmatic and Hedonic Quality Analysis

The UEQ dimensions are conceptually grouped into pragmatic quality (Perspicuity, Efficiency, Dependability) and hedonic quality (Stimulation, Novelty).

Table 3. Pragmatic and Hedonic Quality Scores

No	Quality Category	Mean
1	Pragmatic Quality	0.72
2	Hedonic Quality	0.49
3	Overall UX	0.66

The pragmatic quality score (0.72) is higher than hedonic quality (0.49), indicating that users perceive the application as functionally adequate but emotionally less engaging. This imbalance suggests that while the system supports task completion reasonably well, it lacks elements that stimulate excitement, curiosity, or aesthetic appeal.

Reliability Analysis

Internal consistency reliability was assessed using Cronbach's Alpha.

Table 4. Reliability Coefficients (Cronbach's Alpha)

No	Dimension	Cronbach's Alpha
1	Attractiveness	0.89
2	Perspicuity	0.86
3	Efficiency	0.88
4	Dependability	0.84
5	Stimulation	0.9
6	Novelty	0.87

All alpha values exceed the recommended threshold of 0.70, confirming satisfactory internal consistency. The instrument demonstrates high reliability across both pragmatic and hedonic dimensions, supporting the robustness of the measurement model.

Benchmarking Interpretation

The UEQ benchmark dataset allows comparison with international product evaluations.

Table 5. UEQ Benchmark Interpretation

No	Dimension	Mean	Benchmark Category
1	Attractiveness	0.82	Below Average
2	Perspicuity	0.76	Below Average
3	Efficiency	0.69	Below Average
4	Dependability	0.72	Below Average
5	Stimulation	0.58	Poor
6	Novelty	0.41	Poor

Benchmarking results indicate that most dimensions fall into the "Below Average" category when compared with the international UEQ benchmark dataset, while Stimulation and Novelty are categorized as "Poor." None of the dimensions achieved the "Good" or "Excellent" category.

This finding implies that although user perceptions are not negative, the application does not yet reach competitive experiential standards observed in other digital systems. The relatively weak hedonic dimensions highlight limited emotional engagement and innovation perception.

DISCUSSION

The evaluation of the *Solok Membaca* e-book application using the UEQ provides a clearer picture of how users interact with and perceive the digital library platform. The results indicate that the application generally delivers a positive experience for users, although several aspects still require further improvement. Rather than merely reflecting technical system performance, the findings reveal how users interpret the usability and overall interaction quality of the application during their reading and browsing activities. From the perspective of pragmatic quality, the UEQ dimensions of perspicuity, efficiency, and dependability describe how easily users can understand and operate the system. In this study, users tended to perceive the application as relatively easy to learn, suggesting that the basic interface structure is already understandable for most users. However, some respondents still reported difficulties in navigating certain features, indicating that the clarity of menu structures and system guidance could be further refined. In digital library environments, clear navigation is essential because users typically approach the system with specific information needs. When interface structures are not immediately understandable, users may experience hesitation or confusion when searching for digital materials (Barifah et al., 2020).

The efficiency dimension also received relatively favorable responses from users. This suggests that the application is able to support basic tasks such as browsing, selecting, and reading digital books without requiring excessive effort. Efficient interaction is particularly important in mobile-based applications, where users expect quick responses and straightforward procedures. Digital library usability has shown that slow system responses or complicated navigation processes often discourage users from continuing to explore the platform. Therefore, maintaining system responsiveness and minimizing unnecessary steps in accessing digital collections remain important considerations for improving the application.

The dependability dimension, which reflects the extent to which users feel in control of the system, shows that the application performs adequately but still leaves room for improvement. Some users indicated that certain interactions were not always predictable, especially when switching between features or accessing specific book collections. For digital library applications, consistency of interaction plays an important role in building user trust. When users feel confident that the system behaves consistently, they are more likely to continue using it as part of their regular information-seeking activities.

In addition to pragmatic quality, the hedonic quality dimensions provide insights into how engaging and appealing the application is from the user's perspective. The stimulation dimension suggests that the application offers a reasonably pleasant experience when used for reading and browsing digital books. Users appear to appreciate the opportunity to access digital reading materials through their mobile devices, which aligns with the growing preference for flexible and remote access to information resources. However, the novelty dimension received comparatively lower evaluations. This indicates that although the application functions adequately, users may not perceive its design or features as particularly innovative. In the context of digital library development, this is not uncommon, as many library applications prioritize functional access to information rather than focusing on creative interface design. Nevertheless, incorporating more visually engaging elements or interactive features may enhance the overall experience and encourage users to interact with the platform more frequently.

The findings of this study highlight an important point: the effectiveness of a digital library application cannot be assessed solely from the availability of digital collections or technological infrastructure. The way users experience the system during their interaction with it plays an equally important role. Even when a digital platform provides valuable resources, usability limitations may reduce the extent to which users benefit from those resources. For public libraries, this issue is particularly relevant because digital services are increasingly expected to complement traditional library functions. Mobile-based applications such as the *Solok Membaca* are intended to expand access to reading materials and support community literacy initiatives. However, the success of such initiatives depends largely on whether the technology is accessible, understandable, and comfortable to use for the intended user community.

The results of this research therefore underline the importance of continuous user experience evaluation in the development of digital library systems. By systematically examining how users perceive the application, library institutions can identify specific aspects that require improvement. Feedback derived from UX evaluation can guide system developers in refining interface design, improving system responsiveness, and ensuring that the application remains aligned with user expectations. From a broader perspective, this study also contributes to discussions on the role of user-centered design in library technology development. Digital library applications are not merely technological tools; they represent an important interface between information resources and the communities they serve. Ensuring that these platforms provide a positive and accessible user experience is therefore essential for strengthening the relevance of public libraries in an increasingly digital information environment.

4. CONCLUSION

The findings indicate that the *Solok Membaca* e-book application generally provides a positive user experience, particularly in terms of attractiveness and efficiency, enabling users

to access digital collections conveniently. However, the evaluation also identified areas requiring improvement, especially regarding navigation clarity, interaction consistency, and the novelty of the user experience. These results suggest that, while the application adequately supports digital reading activities, enhancements in interface design and interactive features are necessary to optimize user engagement. This study underscores the importance of systematically evaluating user experience in the development of digital library services. By identifying both the strengths and limitations of the platform, the findings provide practical insights for library managers and system developers seeking to improve the usability and experiential quality of public digital library applications. Ultimately, enhancing user experience is essential for strengthening digital literacy initiatives and promoting equitable access to knowledge in the digital era.

AUTHORS' CONTRIBUTIONS

Dodi Nofri Yoliadi: Writing original draft preparation. Ideas; formulation or evolution of overarching research goals and aims. **Yanti Mulia Roza:** Ideas; formulation or evolution of overarching research goals and aims. **Vindi:** Ideas; formulation or evolution of overarching research goals and aims.

CONFLICT OF INTERESTS

We state that there are no known conflicts of interest linked with this publication, and that there has been no significant financial assistance for this work that could have influenced its outcome.

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