
Analysis and Evaluation of SIDUN Mobile Application in UEQ-Based User Experience Perspective

Dewa Ayu Putri Wulandari^{1*)}

^{1*)}Prodi Informatika , Fakultas Teknologi dan Informatika, Institut Bisnis dan Teknologi Indonesia, Bali, Indonesia

^{1*)}putri.wulandari@instiki.ac.id

ABSTRACT

This study analyzes and evaluates the user experience (UX) of SIDUN, a mobile-based Village Information System designed to manage community contributions digitally in Dusun Tegal Kori Kaja, Denpasar, Bali. The system aims to address limitations of the previous manual process by enabling digital interaction among villagers, pecalang, and administrative staff. The evaluation method applies the User Experience Questionnaire (UEQ), assessing six core dimensions: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty. A total of 30 active users participated in the study by completing the UEQ instrument. The results indicate that all six UX dimensions received positive scores, ranging from 1.58 to 2.00. The highest ratings were observed in Stimulation (2.00), Attractiveness (1.96), and Efficiency (1.92), reflecting high user engagement, visual appeal, and operational speed. Perspicuity and Novelty also showed strong performance, while Dependability, though positive, revealed opportunities for improvement in system reliability and consistency. Compared to the UEQ benchmark, all dimensions achieved “Excellent” ratings, placing them within the top 10% of evaluated applications. These findings affirm that SIDUN offers a satisfying user experience and supports effective community-level digital transformation. The study underscores the value of user-centered design and continuous UX assessment in enhancing public digital services in rural communities.

Keywords: User Experience, UEQ, Mobile Application, Village Information System

1. INTRODUCTION

The utilization of information technology at the smallest community level such as hamlets plays an important role in supporting transparent and efficient e-government practices. One of the crucial aspects of village administration is the management of community fees, which is still done manually, as is the case in Tegal Kori Kaja Hamlet, Denpasar City, Bali. The process of recording based on printed documents that are physically handed over by officers (pecalang), as well as cash payments by residents, has caused various problems. Among them are unsynchronized financial data, low transparency, and decreased public trust in hamlet officials.

As a solution to the problem, an Android and web-based Dusun Dues Information System (SIDUN) has been developed. This application allows digital interaction between residents, pecalang, and hamlet admin in the process of payment, recording, validation, and access to dues history(Gunawan et al., 2024) . Not only providing convenience in administrative operations, this system also aims to increase the participation and digital literacy of hamlet communities. In its implementation, SIDUN is a strategic step towards strengthening accountable and technology-based village financial governance.

This study uses an evaluative method based on the User Experience Questionnaire (UEQ) to measure user perceptions of the quality of experience in using SIDUN. UEQ assesses six main dimensions, namely: attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. This method allows for a holistic analysis, not only of the functional technical aspects, but also of the emotional aspects and users' perceived value of the application.

The advantage of the UEQ approach lies in its ability to integrate pragmatic and hedonic dimensions in the quantitative evaluation of user experience. Compared to functional-based evaluation methods such as black-box testing(Cuadros et al., 2021; Giri et al., 2023; Hidayat & Utomo, 2021) , UEQ provides a deeper understanding of how far the system is subjectively accepted by end users, especially in the context of communities with unique characteristics such as traditional hamlets in Bali.

The use of the UEQ method in the context of limited communities such as hamlets has a high urgency because it

* Corresponding Author



This is an Creative Commons License This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0).

considers the diversity of digital literacy, social engagement between users, and the need for a system that is inclusive and easy to adopt. The objectives of this study are to 1) Analyze the quality of the SIDUN application user experience based on the six dimensions of UEQ. 2) Evaluate the strengths and weaknesses of the interface and system functionality from the user's perspective. 3) Provide recommendations for system development based on the results of the UX evaluation to improve the sustainability of application implementation at the hamlet level.

2. LITERATURE REVIEW

The evaluation of user experience (UX) in the SIDUN mobile application can be effectively conducted using the User Experience Questionnaire (UEQ), which measures key dimensions such as attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. These dimensions are essential for understanding how users interact with the application and influence their overall satisfaction and engagement (Priandani et al., 2023; Ramadhani et al., 2022). Studies on applications demonstrate the UEQ's reliability in capturing positive UX outcomes, highlighting the importance of user-centered evaluation and thoughtful interface design (Abuaddous et al., 2022). The usability and interaction design of mobile apps are critical areas of focus. Research by (Schrepp et al., 2017; Sudipa et al., 2022) emphasizes how strong UI/UX design enhances usability and user satisfaction, while (Kadaskar, 2024) notes that gestural interactions can further enrich user engagement. These elements are particularly relevant for improving SIDUN's user interface. Moreover, the growing reliance on mobile applications underlines the impact of UX on user retention and behavioral outcomes. In the case of PLN Mobile, improved UX design directly increased in-app purchases (Putri et al., 2024). To stay relevant and effective, SIDUN should adopt user-centered design principles, explore novel interaction techniques, and regularly assess usability metrics to align with user expectations and optimize the user experience. However, most UX evaluation studies with UEQ still focus on the education or commercial sectors. This research fills this gap by evaluating a community-based public digital system in a village environment. The advantage of this research lies in the integration of UX evaluation results for concrete recommendations for the development of the SIDUN application.

3. METHODS

This study analyzes and evaluates the quality of user experience (UX) of the SIDUN mobile application. The main instrument used in data collection is the User Experience Questionnaire (UEQ), which is designed to measure user perceptions based on six main dimensions: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty (Hendrian et al., 2024).

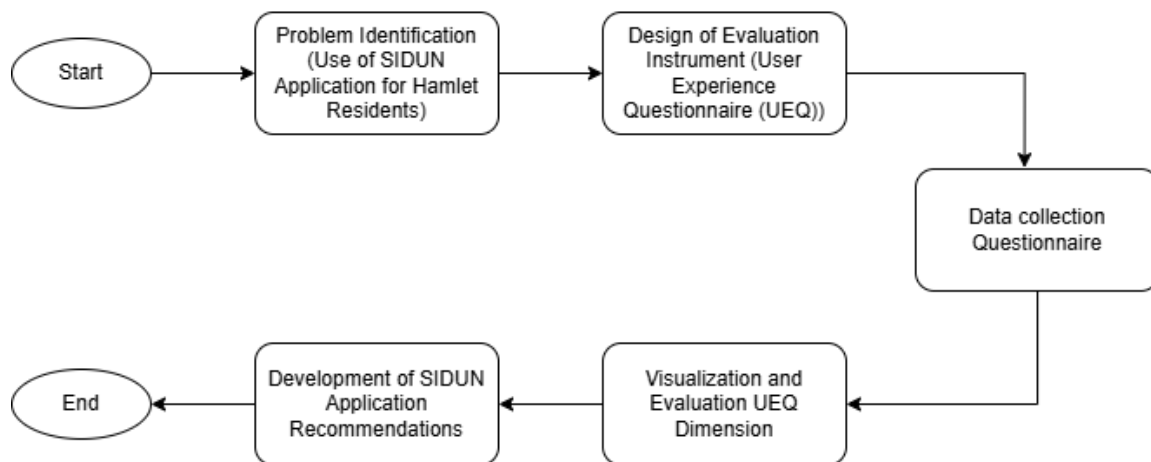


Fig.1 Research flow

* Corresponding Author



This is an Creative Commons License This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0).

The first stage began with the identification of problems related to the use of applications in the context of hamlets, followed by determining the evaluation design using the UEQ model. Next, a questionnaire was distributed to active users of the SIDUN application consisting of residents, pecalang, and hamlet administrators. The data from the questionnaire was then coded and analyzed using the UEQ Data Analysis tool officially provided by the UEQ instrument developer. The analysis process includes calculating the mean value, standard deviation, and visualizing the UX profile in the form of an evaluative scale and profile graph. The UEQ method was chosen due to its ability to measure both pragmatic (functionality and efficiency) and hedonic (satisfaction and attractiveness) aspects, and has been internationally validated in the evaluation of interactive systems. The evaluation results of each UEQ dimension were then analyzed to identify the strengths and weaknesses of the SIDUN application from the perspective of users (Limantara et al., 2019).

Data was collected through a User Experience Questionnaire (UEQ) consisting of 26 statement items with a rating scale of -3 to +3, representing six dimensions of user experience: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty. The respondents of this study amounted to 30 people who were purposively selected, consisting of residents, pecalang, and hamlet administrators who have been actively using the SIDUN application for at least one month.

4. RESULT

UEQ Mean and Variance Testing Results

The participants in this study were 30 respondents who had actively used the SIDUN application for at least one month. The sampling technique used was purposive sampling, taking into account the respondents' direct involvement in the main features of the application. Each respondent was asked to fill out the UEQ questionnaire according to the actual experience when using the application.

Table 1. Reliability Test Results

UEQ Scales (Mean and Variance)		
Attractiveness	2,089	0,46
Clarity	2,016	0,78
Efficiency	2,016	0,49
Accuracy	1,961	0,46
Stimulation	2,086	0,51
Novelty	1,852	0,76

Based on table 1 is the result of the calculation of Mean and Variance. Mean is the result of calculating the average of all respondents' responses while Variance shows the variation in data distribution.

Average Result of UEQ Measurement

Table 2. Average of UEQ Measurement Results

Item	Item	Item	Item	Item	Item	Item	Item
1	1,8	1,0	1,0	32	troublesome	fun	Attractiveness
2	2,0	1,2	1,1	32	incomprehensible	Understandable.	Clarity
3	1,9	1,3	1,1	32	creative	monotonous	Novelty
4	2,1	1,0	1,0	32	easy to learn	difficult to learn	Clarity
5	2,1	0,9	0,9	32	useful	less useful	Stimulation
6	2,0	0,8	0,9	32	boring	Exciting	Stimulation

* Corresponding Author



This is an Creative Commons License This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0).

7	2,2	1,0	1,0	32	not interesting	interesting	Stimulation	
8	2,0	1,2	1,1	32	unpredictable	predictable	Accuracy	
9	1,9	0,7	0,9	32	fast	slow	Efficiency	
10	1,9	1,7	1,3	32	inventive	conventional	Novelty	
11	2,2	0,6	0,8	32	blocking	support	Accuracy	
12	2,5	0,4	0,6	32	both	bad	Attractiveness	
13	1,9	2,1	1,4	32	complicated	Simple	Clarity	
14	1,9	0,8	0,9	32	disliked	encouraging	Attractiveness	
15	1,7	1,5	1,2	32	prevalent	leading	Novelty	
16	2,0	1,3	1,1	32	uncomfortable	convenient	Attractiveness	
17	1,6	1,0	1,0	32	safe	unsafe	Accuracy	
18	2,1	0,5	0,7	32	motivate	not motivating	Stimulation	
19	2,1	0,5	0,7	32	meet expectations	does not meet expectations	Accuracy	
20	2,0	1,1	1,0	32	inefficient	efficient	Efficiency	
21	2,0	1,5	1,2	32	clear	confusing	Clarity	
22	2,1	0,4	0,7	32	impractical	Practical	Efficiency	
23	2,1	0,8	0,9	32	organized	cluttered	Efficiency	
24	2,1	0,3	0,6	32	attractive	not attractive	Attractiveness	
25	2,2	1,0	1,0	32	user-friendly	not user-friendly	Attractiveness	
26	1,9	1,4	1,2	32	conservative	innovative	Novelty	

The mean value of imprecation between -0.8 to +0.8 describes normal evaluation results and mean values above >0.8 and negative evaluation results are characterized by values below <0.8. Table 2 presents the results of Mean and Variance calculations for each of the 6 scales namely Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, Novelty. Of the six scales calculated, a positive evaluation is marked with a green up arrow.

UEQ Calculation Results for Each Dimension

The calculation results can be presented based on three groups, namely Attractiveness, Pragmatic Quality and Hedonic Quality. The three groups get a normal evaluation with a value of 2.09 for Attractiveness, 2.00 for Pragmatic Quality and 1.97 for Hedonic Quality can be seen in table 3 and can be seen in figure 2 in diagram form.

Table 3. UEQ scale

Pragmatic and Hedonic Quality	
Attractiveness	2,09
Pragmatic Quality	2,00
Hedonic Quality	1,97

* Corresponding Author



This is an Creative Commons License This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0).

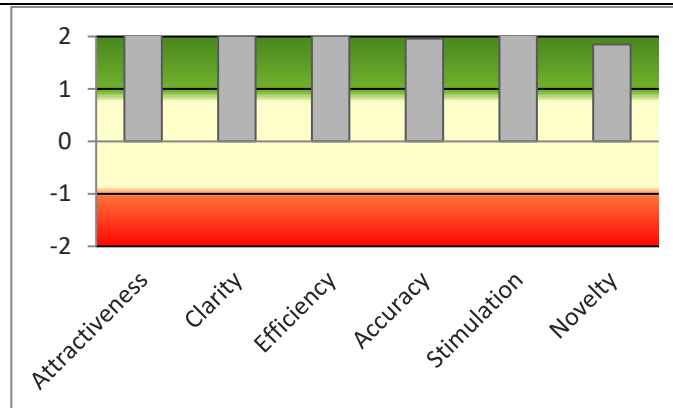


Fig. 2 UEQ Calculation Results for Each Dimension

Benchmark Testing Results

UEQ as a test method and the benchmark table can be compared with the data from the benchmark data set can be seen in table 4.13 and figure 4.61.

Table 4. Benchmark

Scale	Mean	Comparisson to benchmark	Interpretation
Attractiveness	2,09	Excellent	In the range of the 10% best results
Clarity	2,02	Excellent	In the range of the 10% best results
Efficiency	2,02	Excellent	In the range of the 10% best results
Accuracy	1,96	Excellent	In the range of the 10% best results
Stimulation	2,09	Excellent	In the range of the 10% best results
Novelty	1,85	Excellent	In the range of the 10% best results

Interpretation of the scores obtained can be presented in the form of benchmarks, can be seen in table 4 is a graph of the average value of the six UEQ scales. In Figure 4.13 it can be seen that the six UEQ scales are:

- 1) Attractiveness gets excellent results with a value of 2.09.
- 2) Clarity gets excellent results with a score of 2.02
- 3) Efficiency gets excellent results with a value of 2.02
- 4) Accuracy gets excellent results with a value of 1.96
- 5) Stimulants get excellent results with a score of 2.09 and
- 6) Novelty got an excellent result with a score of 1.85.

The best assessment is on the attractiveness and stimulation scale, while the lowest assessment is on the novelty scale.

* Corresponding Author



This is an Creative Commons License This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0).

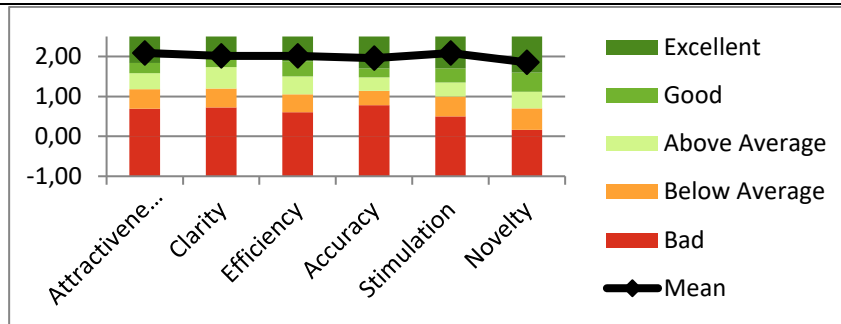


Fig. 3 UEQ Benchmark Graph

Based on Figure 2 above, it can be stated that the results obtained in the test show that the attractiveness and stimulation scale is the scale with the highest score of 2.09 while the lowest scale is on the novelty scale with a score of 1.85 2) After conducting research on respondent data analysis, the results obtained on the benchmark data set show that attractiveness, clarity, efficiency, accuracy, stimulation, and novelty are on an excellent scale.

4. DISCUSSION

The results of UX testing of the SIDUN application showed that this application generally received a positive response from users. Evaluation using the User Experience Questionnaire (UEQ) instrument was conducted to measure user perceptions of six main dimensions: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty. These six dimensions represent two categories of user experience, namely pragmatic experience (function, efficiency, reliability) and hedonic experience (emotional impression, attractiveness, and innovation).

The Stimulation dimension received the highest score of 2.00, indicating that the app is fun, motivating and triggers users' emotional engagement. This score indicates that SIDUN's interface and features are able to create an interactive experience that is not only functionally useful, but also psychologically enjoyable. This is especially important in the context of strengthening hamlet community participation, where user motivation and comfort are determining factors for the sustainability of technology use.

High scores were also seen in Attractiveness (1.96) and Efficiency (1.92). The Attractiveness dimension shows that the app is considered attractive overall-both in terms of visual appearance, design, and user interaction. Meanwhile, the Efficiency score shows that users find the app helps them complete tasks quickly and effectively. In the context of public service applications at the hamlet level, efficiency is one of the important indicators to reduce officer workload and speed up services to the community.

The Perspicuity dimension, which scored 1.83, reflects that users find it easy to understand how the app works. This is important in the context of users coming from different levels of digital backgrounds. This high score indicates that the interface design and navigation is intuitive enough and not confusing, even for non-technical users.

The Novelty dimension, which received a score of 1.85, shows that users feel the value of novelty in using SIDUN. This means that the application provides a different experience from previously used systems, especially since SIDUN is digital-based and offers modern features such as automatic notifications, dues tracking, and transaction history access.

Although the results are generally very positive, the Dependability dimension recorded a lower score than the others, at 1.58. Although still in the positive category, this score suggests that users see room for improvement in aspects of system stability, feature reliability, and consistency in app performance. In UX evaluation, this dimension is closely related to the trust aspect of the system-whether users feel the app works well under various conditions, whether their data is safe, and whether the app's workflow is predictable and unchanging. The Dependability dimension that obtained a relatively lower score is an indicator of the need for improvement in the aspect of application performance stability, especially in fluctuating village network conditions. Further development can focus on improving feature reliability, user data security, and improving the transaction validation flow to make the system more consistent and reliable.

The combination of the results of all six dimensions shows that SIDUN succeeds in creating a strong user experience, both technically and emotionally. The app is not only judged by basic functionality, but also by the extent to

* Corresponding Author



This is an Creative Commons License This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0).

which it satisfies, motivates and interests the user. The advantage of the evaluation approach using UEQ lies in its ability to reveal these aspects quantitatively and thoroughly.

Strategically, the results of this evaluation have important implications for the development team and stakeholders. In the short term, the focus of improvement should be on the Dependability dimension, for example by improving the stability of the system when used in rural networks, fixing minor bugs, and clarifying the flow of data input and validation. Meanwhile, in the long term, the development strategy should maintain and strengthen the already high dimensions such as Stimulation and Efficiency, as these aspects are the advantages of the application that distinguish it from traditional systems. The results also show that the UEQ method is suitable for evaluating community-based public information systems, as it is able to capture a wide range of user perceptions.

5. CONCLUSION

The conclusion of the research shows that in analyzing and evaluating the quality of user experience of the SIDUN mobile application as an Android-based hamlet information system designed to support the management of citizen contributions digitally. The evaluation was conducted using the User Experience Questionnaire (UEQ) method with six main dimensions, namely Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty. The evaluation results show that all dimensions scored positively, with a range of values between 1.58 and 2.00. The dimension with the highest score was Stimulation (2.00), followed by Attractiveness (1.96), Efficiency (1.92), Novelty (1.85), Perspicuity (1.83), and Dependability (1.58). High scores on the Stimulation, Attractiveness, and Efficiency dimensions indicate that the SIDUN app successfully provides a fun, interesting, and efficient user experience in completing tasks. Users found the application easy to understand, innovative, and relevant to their needs in the context of hamlet management. However, the slightly lower Dependability score indicates that there is room for improvement in aspects of system reliability, such as performance stability, consistency of results, and trust in the application's process flow. This is an important concern for developers in improving the technical performance of the system to ensure the application remains reliable under various usage conditions. Overall, the SIDUN application is considered successful in meeting user expectations in terms of functionality and comfort of use. These evaluation results provide a strong basis for further development, especially with a user-centered design approach. This research also shows that the UEQ method is effectively used to evaluate community-based public information systems, such as digital applications at the hamlet level. These findings provide a strong basis for further feature development, such as offline mode support, integration with the hamlet administration system, and strengthening security aspects. Future research is recommended to expand the coverage of respondents in other villages to test the generalizability of the results and compare the level of UX acceptability between communities.

6. REFERENCES

- Abuaddous, H. Y., Saleh, A. M., Enaizan, O., Ghabban, F., & Al-Badareen, A. B. (2022). Automated User Experience (UX) Testing for Mobile Application: Strengths and Limitations. *International Journal of Interactive Mobile Technologies (Ijim)*, 16(04), 30–45. <https://doi.org/10.3991/ijim.v16i04.26471>
- Cuadros, J., Serrano, V., Garcia-Zubia, J., & Hernandez-Jayo, U. (2021). Design and evaluation of a user experience questionnaire for remote labs. *IEEE Access*, 9, 50222–50230. <https://doi.org/10.1109/ACCESS.2021.3069559>
- Giri, I. G. P. Y., Dewi, L. J. E., & Sunarya, I. M. G. (2023). The Evaluation of Usability and Website Development using Cognitive Walkthrough, Performance Measurement, and System Usability Scale. *J. Comput. Networks, Archit. High Perform. Comput*, 5(2), 503–514.
- Gunawan, I. K. A. B., Sudipa, I. G. I., Wardhana, G. W., Radhitya, M. L., & Sandhiyasa, I. M. S. (2024). DESIGNING A DIGITAL DUES APPLICATION TO ENHANCE FINANCIAL TRANSPARENCY AND EFFICIENCY AT THE HAMLET LEVEL. *Proceeding International Conference on Information Technology, Multimedia, Architecture, Design, and E-Business*, 3, 428–435.
- Hendrian, A., Hamzah, M. L., & Ansyar, T. K. (2024). Evaluation of User Experience in Mobile Applications Using User Experience Questionnaire and User Centered Design Methods. *2024 International Conference on Circuit, Systems and Communication (ICCS)*, 1–6. <https://doi.org/10.1109/ICCS62074.2024.10616867>
- Hidayat, A., & Utomo, V. G. (2021). User experience measurement of adaptive online module system using user experience questionnaire. *Journal of Physics: Conference Series*, 1918(4), 42146. <https://doi.org/10.1088/1742-6596/1918/4/042146>

* Corresponding Author



This is an Creative Commons License This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0).

- Kadaskar, H. R. (2024). Enhancing User Experience in Mobile Application Design Through Gestural Interaction: A Human-Computer Interaction Perspective. *International Journal of Scientific Research in Modern Science and Technology*, 3(8), 1–6. <https://doi.org/10.59828/ijrmst.v3i8.239>
- Limantara, N., Jingga, F., & Surja, S. (2019). The evaluation of business process simulation software from user experience perspective using the user experience questionnaire. *2019 International Conference on Information Management and Technology (ICIMTech)*, 1, 261–265. <https://doi.org/10.1109/ICIMTech.2019.8843820>
- Priandani, N. D., Sandy, Y. A., & Sari, N. R. (2023). User Experience Evaluation of Botani Mobile Application Using User Experience Questionnaire. *Jurnal Teknologi Dan Manajemen Informatika*, 9(1), 12–19. <https://doi.org/10.26905/jtmi.v9i1.9025>
- Ramadhani, M., Susanto, A. A., Mustofa, F., & Tauda, V. S. (2022). Design and User Experience Evaluation of Bersii Android-Based Mobile Application User Interface. *Matics Jurnal Ilmu Komputer Dan Teknologi Informasi (Journal of Computer Science and Information Technology)*, 14(2), 41–49. <https://doi.org/10.18860/mat.v14i2.16919>
- Schrepp, M., Hinderks, A., & Thomaschewski, J. (2017). Design and evaluation of a short version of the user experience questionnaire (UEQ-S). *International Journal of Interactive Multimedia and Artificial Intelligence*, 4 (6), 103-108.
- Sudipa, I. G. I., Aditama, P. W., & Yanti, C. P. (2022). Developing Augmented Reality Lontar Prasi Bali as an E-learning Material to Preserve Balinese Culture. *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications (JoWUA)*, 13(4), 169–181. <https://doi.org/10.58346/JOWUA.2022.I4.011>

* Corresponding Author



This is an Creative Commons License This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0).