Evaluation of User Experience in the Banjarbaru Disdukcapil Public Service Application Using User Experience Questionnaire and System Usability Scale

Asri Martalisa[1], Setyo Wahyu Saputro[2*], Dodon Turianto Nugrahadi[3], Friska Abadi[4], Irwan Budiman[5]

[1,2,3,4,5]Computer Science Department, Universitas Lambung Mangkurat, Indonesia

Abstract.

Purpose: Dukcapil Banjarbaru is an online-based government agency application used for various public services. According to the complaint report from Disdukcapil Banjarbaru, several users have reported similar problems and difficulties. The application has received a rating of 3.3 stars from approximately 24.000 users on the Google Play Store. Therefore, researchers conducted a user experience analysis using the UEQ methods and a usability evaluation using the SUS methods.

Methods: This research analyzes user experience in applications using the UEQ to identify issues faced by users and evaluate usability through the System Usability Scale. The UEQ method is chosen for its efficiency and simplicity in assessing user experience within an application. The SUS method is employed because it is an effective approach for obtaining reliable statistical data and generating clear and accurate scores.

Result: The UEQ benchmark results show that the scales for Attractiveness (1.59), Efficiency (1.68), Accuracy (1.66), and Stimulation (1.54) are categorized as "Good." The scales for clarity (1.37) and novelty (0.80) are classified as "Above Average." Meanwhile, the SUS score of 65 positions the application within the "acceptable" category for the acceptability range, the "D" category on the grade scale, and the "OK" category for adjective ratings. This indicates that while the Banjarbaru Dukcapil application has good usability, it requires improvements based on the total SUS score, which reveals several critical areas with scores below the average (258.4).

Novelty: In this research, solutions for improvements are provided to Disdukcapil based on each aspect to improve the quality of the application, thereby offering better services to users.

Keywords: User experience, User experience questionnaire, Usability, System usability scale, UEQ, SUS

INTRODUCTION

The advancement of information technology in Indonesia is currently undergoing rapid growth. The use of information technology in public service delivery has become a global trend in improving effectiveness, openness, and community involvement in the decision-making process. E-Government represents a significant advancement in public administration, involving the use of information and communication technology (ICT) as a novel tool to deliver public services more efficiently, transparently, accountably, and effectively [1]. Therefore, E-Government serves as a governmental solution in establishing the principles of good governance [2].

Banjarbaru City employs E-Government across various governmental sectors. One such initiative is the public service provided by the Disdukcapil Banjarbaru, which features an Android-based mobile application developed by the Banjarbaru City Government to enhance community services. The Dukcapil Banjarbaru Mobile application is an online government agency information system that facilitates various services, including the issuance of Family Cards, Identity Cards, Death Certificates, Marriage Certificates, Birth Certificates, Child Identity Cards, and the registration of Population Arrival or Relocation Data Collection.

[*]Corresponding author.

Email addresses: 2011016320017@mhs.ulm.ac.id (Martalisa), setyo.saputro@ulm.ac.id (Saputro)[*], dodonturianto@ulm.ac.id (Turianto), friska.abadi@ulm.ac.id (Abadi), irwan.budiman@ulm.ac.id (Budiman)

Based on observations from the Disdukcapil Banjarbaru website complaint report, several users reported similar issues with the Dukcapil Banjarbaru Mobile application, specifically difficulties in logging in and confusion regarding the usage flow. Additionally, the Google Play Store rating for the Dukcapil Banjarbaru Mobile application is relatively low, namely 3.3 based on feedback from approximately 10,000 users. Furthermore, users complained that the Dukcapil Banjarbaru Mobile application is only accessible during working hours, specifically from 7 AM to 12 PM. The Disdukcapil Banjarbaru must prioritize user convenience in utilizing the application to effectively address the requirements of the Banjarbaru community. An application should be to facilitate users in addressing their needs to produce a good user experience [3]. To address this issue, researchers analyzed the Dukcapil Banjarbaru Mobile application's user experience by employing the User Experience Questionnaire (UEQ) to measurement of user experience quality [4] and the System Usability Scale (SUS) to evaluate usability levels [5]. The use of the UEQ method is because it is more efficient and simpler in evaluating the user experience of an application [6]. Meanwhile, the SUS method approach was used since it was effective in generating precise and unambiguous scores and acquiring dependable statistical data [7]. The UEQ is a method used to measure the user experience of a product; the purpose is to enable a quick assessment of the perceived user experience [8], [9]. UEQ has been frequently utilized in prior research to assess and describe user satisfaction. However, an absence of comprehensive studies exploring the user experience of the Dukcapil Banjarbaru Mobile application using qualitative methods that highlight the potential relationship between the application's features and user satisfaction. One important factor that determines how effective a product and user satisfaction is usability [10], [11]. To determine how easy it is to use the Dukcapil Banjarbaru Mobile application, a usability evaluation was conducted to assess user perceptions regarding its ease of learning, efficiency, memorability, error frequency, and user satisfaction [12]. The SUS is a subset of usability testing that focuses on end-user tests and evaluates software interface interactions. The SUS method emphasizes the perspective of end users to generate an evaluation that more accurately represents real-world conditions [13]. The SUS questionnaire aims to provide a user perspective on the usability of the product and to be completed quickly minimizing the time required from users [14]–[16].

Several previous research have been conducted on User Experience (UX) similar methodologies. In 2022, Khuntari conducted research applying the UEQ to the Gojek and Grab applications. The study aimed to identify variables that received positive responses and to analyze differences in user experiences that influence user preferences [17]. In 2022, Sari and Henim conducted research utilizing the SUS to evaluate the Pekanbaru city tourism website. The objective of the research was to measure the quality of the UX when using the website [18]. In 2023, Ibrahim et al. conducted research on the OVO application, utilizing the UEQ and SUS methods to evaluate the measure of usability and user experience [19].

According to the problem background presented and previous research, this study aims to evaluate user satisfaction with the Dukcapil Banjarbaru Mobile application using the UEQ and SUS methods. This research is expected from a combination of these two methods to identify both the positive and negative aspects of the application, providing recommendations to enhance the quality of services it offers.

METHODS
The methodology of this research encompasses multiple stages, as illustrated in Figure 1.
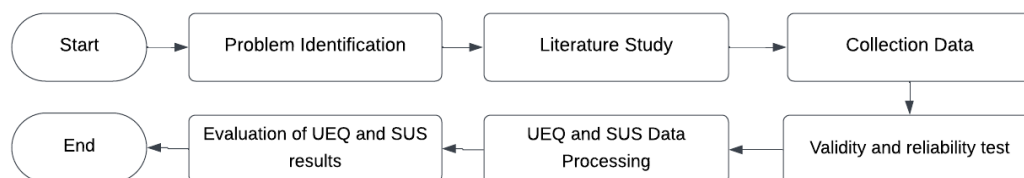
Figure 1. Research flow

The initial stage of this paper involves identifying problems through preliminary observations based on the Disdukcapil Banjarbaru complaint report and the ratings from the Google Play Store. Furthermore, a literature review was conducted to identify theories that could support the research analysis. To accomplish this objective, a comprehensive review of relevant methods was conducted, utilizing sources such as books, peer-reviewed journals, articles, and prior research studies.

This study employed a dual approach: an online survey administered via Google Forms and an offline survey conducted at the Disdukcapil Banjarbaru service site. The online approach, utilizing Google Forms, enables the application to reach users dispersed across various locations. Conversely, the offline approach at the Disdukcapil Banjarbaru service site facilitates the direct collection of data from users engaged in population administration processes. The integration of these two approaches is anticipated to yield more representative and comprehensive results. Sampling entails selecting a representative subset of the population that encompasses both quantity and characteristics [20], [21]. This study used the Slovin formula with a margin of error of 10% (0.1).

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

n is the number of samples, N is the population size, and e is the margin of error. In this study, the population of app users was 74,000, resulting in a sample size of 100 respondents. The sample size was adequate to ensure measurement consistency, a method proven effective in previous studies [22], [23].

The questionnaire employed in this study comprises questions pertaining to user identity, 26 elements from the UEQ, and 10 elements from the SUS. The UEQ comprises 26 question elements distributed across 6 rating scales, serving as measurement guidelines. These scales include (1) Attractiveness: an evaluation of the user's overall experience with the product. (2) Perspicuity: an evaluation of the user's ease of understanding and familiarity with the product. (3) Efficiency: an evaluation of the user's ability to complete tasks quickly and effectively. (4) Dependability: an evaluation of the level of control users feel during interaction. (5) Stimulation: an evaluation of the user's level of pleasure and motivation in using the product. (6) Novelty: an evaluation of the product's creativity and innovation in attracting customers [24]. The UEQ question elements categorized according to the evaluated scale are shown in Table 1 [9], [19].

Table 1. UEQ instrument

Code	Elements		Scale	Code	Elements		Scale
ATT1	Annoying	Enjoyable	Attractiveness	EFF4	Organized	Untidy	Efficiency
ATT2	Good	Bad	Attractiveness	DEP1	Unpredictable	Predictable	Dependability
ATT3	Unlikable	Pleasing	Attractiveness	DEP2	Obstructive	Supportive	Dependability
ATT4	Unpleasant	Pleasant	Attractiveness	DEP3	Secure	Not Secure	Dependability
ATT5	Attractive	Unattractive	Attractiveness	DEP4	Meets expectations	Does not meet expectations	Dependability
ATT6	Friendly	Unfriendly	Attractiveness	STI1	Valuable	Inferior	Stimulation
PER1	Not understandable	Understandable	Perspicuity	STI2	Boring	Exiting	Stimulation
PER2	Easy to learn	Difficult to learn	Perspicuity	STI3	Not interesting	Interesting	Stimulation
PER3	Complicated	Easy	Perspicuity	STI4	Motivating	Demotivating	Stimulation
PER4	Clear	Confusing	Perspicuity	NOV1	Creative	Dull	Novelty
EFF1	Fast	Slow	Efficiency	NOV2	Intentive	Conventional	Novelty
EFF2	Inefficient	Efficient	Efficiency	NOV3	Usual	Leading edge	Novelty
EFF3	Unpractical	Practical	Efficiency	NOV4	Conservative	Innovative	Novelty

John Brooke has developed the SUS in 1986 [25]. The SUS questionnaire has 10 statements and a 5-point Likert scale to assess the usability of a product. Participants' responses on the system usability scale range from 1 (strong disagreement) to 5 (strong agreement) with the provided statements [26]. The SUS questionnaire assesses three critical dimensions: (1) Effectiveness, which evaluates the use of this technology in achieving user goals; (2) Efficiency, measuring the effort and user resources expended in goal attainment; and (3) Satisfaction, reflecting the overall satisfaction with the user experience [27]. The SUS questionnaire is shown in Table 2.

Table 2. SUS instrument

Code	Questions
SUS1	I think I to continue using the Banjarbaru Dukcapil application in the future.
SUS2	I felt that the Banjarbaru Dukcapil application was too complicated to use
SUS3	I found the Banjarbaru Dukcapil application easy to use
SUS4	I think that I would need the support of a technical person to be able to use this Banjarbaru Dukcapil application.
SUS5	I evaluate that the functions and features provided in the Banjarbaru Dukcapil application are well-designed and thoroughly prepared.
SUS6	I found the Banjarbaru Dukcapil application to be overly inconsistent.
SUS7	I think that most people would learn to use this Banjarbaru Dukcapil application very quickly.
SUS8	I found the Banjarbaru Dukcapil application confusing to use
SUS9	I felt very confident using the Banjarbaru Dukcapil application.
SUS10	I needed to familiarize myself first before I could get going with this Banjarbaru Dukcapil application.

(Source: Supriyadi *et al.,* 2020 [28])

After completing data collection, the subsequent step involves conducting tests using SPSS to obtain results for validity and reliability assessments. The validity test evaluates the degree to which data collected via the questionnaire can be deemed accurate and reliable [24], [29]. The validity test involves comparing the observed t value with the critical t value. If the t-count exceeds the critical t value, the questionnaire item is deemed valid; conversely, if the observed t value is smaller than the critical t value, the questionnaire item is considered invalid [30], [31]. The reliability test is used to assess the dependability of the questionnaire as a measurement tool [32].

The subsequent step involves processing UEQ and SUS data, commencing with the determination of weight values for each respondent's answers. The weight value is subsequently analyzed following the guidelines of the SUS and UEQ to serve as an indicator of user acceptance quality pertaining to user interface and user experience [26].

The data processing using the UEQ method with Data Analysis Tools Version 12 which was downloaded from the official UEQ website at https://www.ueq-online.org/, to generate product evaluations for each scale automatically after the questionnaire data is entered [33]. The data in the descriptive statistical test includes the mean value as the average, minimum as the lowest value, maximum as the highest value, and standard deviation to describe the distribution of data and each research variable. The UEQ employs specific guidelines for participant responses. After that, the respondent's response data is changed or translated to determine the negative and positive values of each response item. The UEQ questionnaire data utilizes a 7-point Likert scale, each item on the scale is scored from -3 (fully agreeing with a negative term) to +3 (fully agreeing with a positive term) [26], [30].

Table 3. Conversion scale [6]

Initial scale	1	2	3	4	5	6	7
Conversion scale	-3	-2	-1	0	1	2	3

Calculation of the Euclidean distance between each data point and each cluster centroid is marked with $d\left(x_i, c_j\right)$, where x_i is the data point for each i-th attribute ($i = 1,2,3,.....n$) with i representing the sequence of data point attributes and n represents the number of attributes. Meanwhile, c_j is the centroid of each j-th attribute ($j = 1,2,3,.....n$) with j representing the sequence of centroid attributes in the cluster (k). Each row of data points and centroids calculates the distance to each of the identical or corresponding attributes. Based on the distance calculations, data points are assigned to the cluster nearest to the centroid. Once the clusters are formed, the average of each attribute within each cluster is computed to update the centroid's position. This process repeats iteratively until no significant changes occur in the cluster composition or the movement of data points. After all data points are correctly grouped into their respective clusters, the next step involves calculating the SSE (Sum of Squared Errors) value for each k value during the application of the elbow method.

Furthermore, the calculation of UEQ values involves determining the mean and variance of responses from each participant. Subsequently, the results will undergo group-based analysis, considering the overall scale and the assumption scales of Attractiveness, Pragmatic Quality, and Hedonic [34].
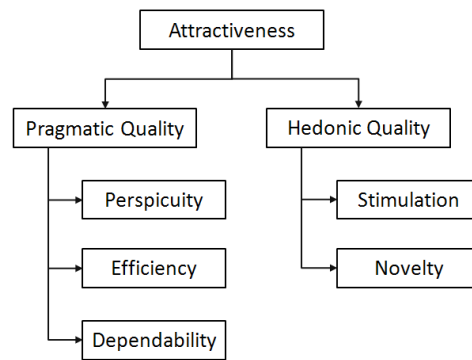
Figure 1. Assumption scale [34]

If the impression value lies between -0.8 to 0.8, the evaluation result is considered normal. An impression value exceeding 0.8 indicates a positive evaluation, while a value below -0.8 signifies a negative evaluation [35].

Table 4. Average value scale

Average Value	Result
> 0,8	Positive
-0,8 - 0,8	Neutral
< -0,8	Negative

Subsequently, the evaluation results based on each UEQ scale will undergo analysis using a benchmark. Benchmarks serve to compare the outcomes of a product's user experience evaluation with other assessments conducted using UEQ [33]. These benchmark scores facilitate the assessment of product performance across various User Experience aspects. The UEQ Benchmark categorizes products into five distinct scales [34], [35]:

1. Excellent: The product evaluated ranks within the top 10% of all results.
2. Good: The product evaluated outperformed by 10% of the benchmark, while 75% performed worse.
3. Above Average: The product evaluated exceeds 50% of benchmark results, while 25% perform better.
4. Below Average: The product evaluated surpasses 50% of benchmark results, with 25% performing worse.
5. Poor: The product evaluated falls within the bottom 25% of all results.

Table 4 shows the standardized benchmark scale across five categories with the average scale values for the six UEQ scales [34].

Table 5. Benchmark Standard Scale

Scale	Category				
	E	G	AA	BA	B
Attractiveness	> 1,75	> 1,52	> 1,17	> 0,7	≤ 0,7
Perspicuity	> 1,9	> 1,56	> 1,08	> 0,64	≤ 0,64
Efficiency	> 1,78	> 1,47	> 0,98	> 0,54	≤ 0,54
Dependability	> 1,65	> 1,48	> 1,14	> 0,78	≤ 0,78
Stimulation	> 1,55	> 1,31	> 0,99	> 0,5	≤ 0,5
Novelty	> 1,4	> 1,05	> 0,71	> 0,3	≤ 0,3

The calculation of the SUS value begins by adjusting each response to odd-numbered questions, subtracting one from the scale value, as shown in Equation 1.

$$odd\ weight\ =\ xi - 1 \tag{1}$$

Equation 2 illustrates the conversion for even-numbered questions, where the scale value is subtracted from five.

$$even\ weight\ =\ 5 - xi \tag{2}$$

The value for each respondent is calculated by summing the converted scale values (odd and even weights) and then multiplying the total by 2.5, as demonstrated in Equation 3.

$$total = (odd\ weight + even\ weight) * 2{,}5 \tag{3}$$

The final SUS score is derived by summing the individual scores of all respondents and then dividing by the total number of respondents to compute the average SUS score, as illustrated in Equation 4.

$$\bar{x} = \frac{\sum x}{n} \tag{4}$$

$\bar{x}$ = average result
$\sum x$ = total item value per scale
n = number of respondents

The final SUS score provides a comprehensive overview of the system's usability with standardized interpretations that categorize the scores into three perspectives: Acceptability Ranges, Grade Scales, And Adjective Ratings. There are three levels of acceptability: not acceptable, marginal, and acceptable. The grading scale includes A, B, C, D, and F. The Adjective Ratings range from worst imaginable, poor, ok, good, excellent, to best imaginable [7].

RESULTS AND DISCUSSIONS
Result
The distribution of questionnaires in this study resulted in a total of 100 respondents, with 37 respondents participating online and 63 respondents participating offline. The characteristics of the respondents were categorized according to their age, gender, domicile, occupation, and use of apps. The results of the respondent characteristics are presented in Table 6.

Table 6 Participant's characteristics

Characteristics	Category	Frequency	Percentage	Characteristics	Category	Frequency	Percentage
Gender	Male	48	48%		Student	27	27%
	Female	52	52%		Swasta	24	24%
Age	18 - 25 years	45	45%		Entrepreneurs	3	3%
	26 - 30 years	12	12%		Housewife	16	16%
	30 - 35 years	17	17%	Occupation	Public Servant	6	6%
	35 - 40 tahun	8	8%		Academic Personnel	5	5%
	>40 years	18	18%		Retire	1	1%
	Landasan Ulin	23	23%		Etc	18	18%
	Banjarbaru Utara	25	25%		Identity cards	46	46%
	Banjarbaru Selatan	27	27%		Family cards	28	28%
Domicile	Cempaka	10	10%	App Usage	Population Arrival / Relocation Data Collection	14	14%
	Liang Anggang	10	10%		Child Identity Cards	10	10%
	Unknown	5	5%		Death Certificates	2	2%

Discussion
Validity and reliability test
Validity and reliability testing in this study was conducted using SPSS Version 23 software tools. The validity test for the UEQ and SUS is conducted by modifying the elements based on the data obtained from the questionnaire responses. As implemented in prior research employing similar techniques [16], this adjustment involved converting initially negative question elements into positive ones. The validity test in this study involved 100 respondents with a confidence level of 5% or 0,05 [19], [24], [25], [31], requiring the observed r value to exceed the critical r value of 0.195. The method used for the validity test is Pearson's bivariate correlation. According to the data presented in Tables 7 and 8, the UEQ and SUS validity test

results for all elements are confirmed to be valid, as the calculated correlation coefficient exceeds the observed r value from the r table value.

Table 7. UEQ validity result

Attractiveness

Code	The observed r value	The critical r value	Result
ATT1	0,659		
ATT2	0,738		
ATT3	0,848	0,195	valid
ATT4	0,629		
ATT5	0,829		
ATT6	0,800		

Perspicuity

Code	The observed r value	The critical r value	Result
PER1	0,858		
PER2	0,846	0,195	valid
PER3	0,836		
PER4	0,846		

Efficiency

Code	The observed r value	The critical r value	Result
EFF1	0,756		
EFF2	0,816	0,195	valid
EFF3	0,774		
EFF4	0,849		

Dependability

Code	The observed r value	The critical r value	Result
DEP1	0,733		
DEP2	0,808	0,195	valid
DEP3	0,824		
DEP4	0,844		

Stimulation

Code	The observed r value	The critical r value	Result
STI1	0,725		
STI2	0,849	0,195	valid
STI3	0,712		
STI4	0,825		

Novelty

Code	The observed r value	The critical r value	Result
NOV1	0,830		
NOV2	0,27	0,195	valid
NOV3	0,822		
NOV4	0,829		

Table 8. SUS validity result

System Usability Scale			
Code	The observed r value	The critical r value	Result
SUS1	0,531		
SUS2	0,676		
SUS3	0,773		
SUS4	0,626		
SUS5	0,520	0,195	valid
SUS6	0,601		
SUS7	0,666		
SUS8	0,779		
SUS9	0,676		
SUS10	0,662		

The reliability test is performed by examining the Cronbach's Alpha value for each variable [36]. According to the data presented in Tables 9 and 10, the reliability test results for all elements in the UEQ and SUS are confirmed to be reliable, with Cronbach's Alpha value exceeding 0.60 [37].

Table 9. UEQ reliability result

Scale	Cronchbach's Alpha	Standard Value	Result
Attractiveness	0,844		
Perspicuity	0,866		
Efficiency	0,811		
Dependability	0,809	0,60	Reliable
Stimulation	0,777		
Novelty	0,843		

Table 10. SUS reliability result

Cronchbach's Alpha	N of elements	Result
0,842	0,60	Realible

Evaluation results using the UEQ

The data processing stage includes transforming the original data and subsequently calculating the mean score for each user experience aspect. The average value scores for each item are presented in Table 11. Meanwhile, the average value by aspect is presented in Table 12. The table shows the Novelty scale falls within the yellow area, indicating a neutral value, whereas the Attractiveness, Perspicuity, Efficiency, Dependability, and Stimulation scales of the Dukcapil Banjarbaru Mobile application are in the green area, signifying a positive value. Subsequently, the results of the UX evaluation are presented in Figure 3.

Table 11. Average value for each element

Code	Mean	Variance	Std. Dev.	Scale	Code	Mean	Variance	Std. Dev.	Scale
ATT1	1,6	1,7	1,3	Attractiveness	ATT3	1,4	2,0	1,4	Attractiveness
PER1	1,6	2,3	1,5	Perspicuity	NOV3	0,4	3,1	1,8	Novelty
NOV1	0,9	2,9	1,7	Novelty	ATT4	1,6	1,3	1,1	Attractiveness
PER2	1,3	3,2	1,8	Perspicuity	DEP3	1,9	1,5	1,2	Dependability
STI1	2,0	2,1	1,5	Stimulation	STI4	1,4	2,1	1,4	Stimulation
STI2	1,1	2,8	1,7	Stimulation	DEP4	1,5	2,0	1,4	Dependability
STI3	1,6	1,5	1,2	Stimulation	EFF2	1,9	1,6	1,3	Efficiency
DEP1	1,3	2,2	1,5	Dependability	PER4	1,2	3,0	1,7	Perspicuity
EFF1	1,6	2,3	1,5	Efficiency	EFF3	1,7	1,7	1,3	Efficiency
NOV2	0,7	3,0	1,7	Novelty	EFF4	1,6	2,1	1,5	Efficiency
DEP2	1,8	1,5	1,2	Dependability	ATT5	1,5	1,8	1,3	Attractiveness
ATT2	1,6	2,3	1,5	Attractiveness	ATT6	1,9	1,3	1,1	Attractiveness
PER3	1,4	2,6	1,6	Perspicuity	NOV4	1,2	3,2	1,8	Novelty

Table 12. Average value by aspect

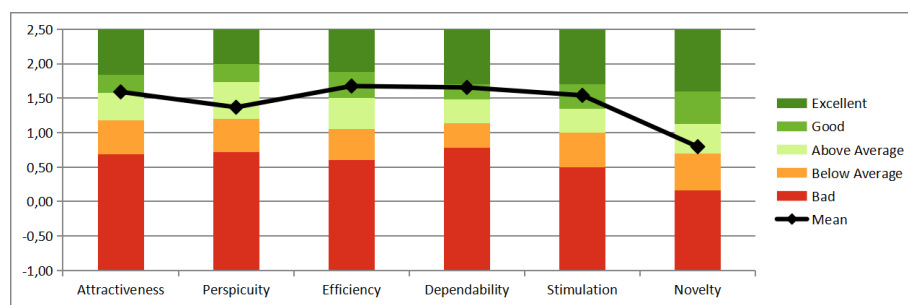| UEQ Scale (Mean and Variance)			
Attractiveness	1,590	0,98	positive
Perspicuity	1,368	1,99	positive
Efficiency	1,675	1,31	positive
Dependability	1,655	1,07	positive
Stimulation	1,540	1,35	positive
Novelty	0,795	1,95	neutral

Figure 2. Dukcapil banjarbaru mobile benchmark result graph

The UEQ benchmark results for the Attractiveness scale yielded a mean score of 1.59, which is categorized as 'Good'. This places the application within the top 10%-25% of benchmark results, indicating a generally positive user experience. According to the average score of each element in each scale, which reflects respondents' assessments as shown in Table 1 and previous research [8], the results suggest that the Dukcapil Banjarbaru Mobile application is perceived as enjoyable, favorable, pleasing, attractive, and user-

friendly by a majority of users. The Perspicuity scale yielded a mean score of 1.37 and was categorized as 'Above Average', indicating that while 25% of benchmark results performed better, respondents generally find the application easy to understand. The Efficiency scale yielded a mean score of 1.68 and was categorized as 'Good', indicating that the application effectively supports users in completing tasks practically and efficiently, with its performance surpassing that of 75% of benchmarked results. The Dependability scale yielded a mean score of 1.66 and was categorized as 'Good', indicating that respondents perceive the application as reliable, secure, and capable of meeting their expectations. The stimulation scale yielded a mean score of 1.54 and was categorized as 'Good', indicating that the Dukcapil Banjarbaru Mobile application can motivate some respondents when using it. Finally, the Novelty scale yielded a mean score of 0.80 and was categorized as 'Above Average', indicating that while 25% of benchmark results surpassed it, respondents generally recognize the application as relatively innovative and distinctive in its features.

Evaluation results with SUS

After collecting all questionnaire responses, the researcher transformed the data of each respondent and computed the mean SUS score. Subsequently, the final score can be utilized to evaluate whether the system is rated as good or not. Table 13 presents the results of calculating the mean SUS score for each respondent with the final SUS score from 100 respondents being 65. Subsequently, the results of the SUS evaluation are presented in Figure 4. The interpretation of the SUS score of 65 indicates an acceptability range in the 'acceptable' category, a grade scale level of 'D', and an adjective rating of 'OK'.

Table 13. Results of SUS value calculation

R	Total	Score	R	Total	Score	R	Total	Score	R	Total	Score	R	Total	Score
1	23	57,5	21	28	70	41	24	60	61	35	87,5	81	23	57,5
2	28	70	22	36	90	42	28	70	62	22	55	82	28	70
3	29	72,5	23	25	62,5	43	16	40	63	25	62,5	83	24	60
4	21	52,5	24	40	100	44	36	90	64	22	55	84	23	57,5
5	27	67,5	25	34	85	45	24	60	65	26	65	85	21	52,5
6	39	97,5	26	35	87,5	46	32	80	66	28	70	86	14	35
7	26	65	27	29	72,5	47	30	75	67	29	72,5	87	27	67,5
8	19	47,5	28	14	35	48	21	52,5	68	21	52,5	88	18	45
9	11	27,5	29	29	72,5	49	25	62,5	69	16	40	89	33	82,5
10	31	77,5	30	30	75	50	30	75	70	26	65	90	23	57,5
11	34	85	31	23	57,5	51	27	67,5	71	22	55	91	23	57,5
12	21	52,5	32	28	70	52	26	65	72	19	47,5	92	26	65
13	33	82,5	33	31	77,5	53	35	87,5	73	18	45	93	25	62,5
14	31	77,5	34	34	85	54	23	57,5	74	28	70	94	24	60
15	24	60	35	27	67,5	55	22	55	75	22	55	95	27	67,5
16	18	45	36	40	100	56	23	57,5	76	26	65	96	26	65
17	34	85	37	29	72,5	57	32	80	77	13	32,5	97	14	35
18	38	95	38	29	72,5	58	19	47,5	78	18	45	98	18	45
19	22	55	39	28	70	59	27	67,5	79	19	47,5	99	27	67,5
20	29	72,5	40	26	65	60	25	62,5	80	30	75	100	17	42,5

Average Score (End Result)

65

Table 14 Calculation results of SUS questions

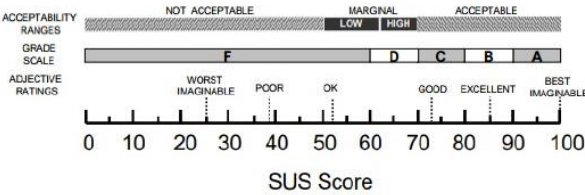| Code	Score Total	Code	Score Total
SUS1	290	SUS6	250
SUS2	282	SUS7	257
SUS3	298	SUS8	258
SUS4	271	SUS9	288
SUS5	283	SUS10	161
Average Score			
258,4			

Figure 3. Final result of SUS

The SUS analysis shows that the Banjarbaru Dukcapil application has a fairly good level of usability to use, but still has some weaknesses that need to be improved based on the total score of SUS questions shown in Table 14. The table identifies several critical areas with below-average scores (258.4) that require improvement to enhance the user experience of the Dukcapil Banjarbaru Mobile application. These areas can be summarized as follows:

1. Question Q4 has a below-average score of 271, indicating that users experience difficulty in understanding and using the application independently. The solution to this issue involves simplifying the user interface to be more intuitive and consistent, thereby making it easier for users to understand and use the application independently, without requiring technical assistance.
2. Question Q6 scored below average with a score of 250, indicating that users perceived inconsistencies in the interface. Question Q8 scored close to average with a score of 258, suggesting that users found the application confusing. The resolution of these two issues can be achieved by enhancing the consistency of design elements and navigation within the application, thereby reducing user confusion.
3. Question Q7 scored close to average with a score of 257, indicating that a significant portion of users do not quickly comprehend the application's usage. The resolve this issue, the user guide should be updated to ensure understood by all users. This can be achieved by incorporating illustrative images alongside textual Results.
4. Question Q10 has a score of 161 which is significantly below the average, suggesting that users require additional time to familiarize themselves with the application. The resolve this issue, enhancements should be made across all aspects, including interface design, service quality, and security measures.

CONCLUSION

This study aims to evaluate user satisfaction with the Dukcapil Banjarbaru Mobile application by applying the User Experience Questionnaire (UEQ) and System Usability Scale (SUS) methods. The benchmark results from the UEQ indicate that the Dukcapil Banjarbaru Mobile application has a generally favorable user experience, with average scores of 1.59 for attractiveness, 1.68 for efficiency, 1.66 for accuracy, and 1.54 for stimulation, all categorized as "Good." These results suggest that respondents find the application appealing, efficient, accurate, and motivating to use. Clarity and novelty received scores of 1.37 and 0.80, respectively, classified as "Above Average," indicating that the application is relatively easy to understand and considered innovative by users. SUS analysis indicates that the score is 65, which falls into the "D" category on the grade scale and the "OK" range for adjective ratings, suggesting that the application's usability is below average and users experience some dissatisfaction. To enhance user convenience, developers can utilize the recommendations from the evaluation results of this research. These recommendations include ensuring design consistency by avoiding the duplication of application menus, thereby making navigation more efficient. Update the user guide by adding illustrative examples or providing a dedicated menu to enable users to access information independently without requiring technical assistance. Additionally, to enhance the application's quality of service, it is recommended to implement an informative error notification mechanism for file upload failures without redirecting the user to the main menu. Furthermore, system improvements should be made to prevent automatic logouts, particularly when the user is completing a form.

This study supports the development of digital services at Disdukcapil Banjarbaru by enhancing community access to essential administrative services. Resolving the identified issues will bolster the government's digital transformation efforts. Enhancements in usability and user experience are anticipated to increase user adoption, reduce complaints, and accelerate service efficiency. This study can be used as a foundation for further research. The findings can also be used as a benchmark for assessing other e-government programs, ensuring that usability and accessibility aspects are fulfilled. The Dukcapil Banjarbaru Mobile application's enhancements are expected to set the standard for digital service optimization in other areas.

REFERENCES

[1]   R. Ramadhan, R. Arifianti, and R. Riswanda, "IMPLEMENTASI E-GOVERNMENT DI KOTA TANGERANG MENJADI SMART CITY (Studi Kasus Aplikasi Tangerang Live)," *Responsive*, vol. 2, no. 3, p. 89, Feb. 2020, doi: 10.24198/responsive.v2i3.26083.
[2]   R. Watrianthos, A. Nasution, and M. Syaifullah, "MODEL e-GOVERNMENT PEMERINTAHAN DESA," *Maj. Ilm. UNIKOM*, vol. 17, pp. 53–60, Sep. 2019, doi: 10.34010/miu.v17i1.2239.
[3]   I. Wahyu, P. Santika, I. B. Ary Indra Iswara, and I. N. Arsana, "Analisis dan Evaluasi Pengalaman Pengguna PaTik Bali dengan Metode User Experience Questionnaire (UEQ)," *J. Teknol. Inf. dan Ilmu Komput.*, vol. 8, p. 217, Mar. 2021, doi: 10.25126/jtiik.2020762763.

[4] E. Kurniawati and C. I. Ratnasar, "Pengujian Pengalaman Pengguna (User Experience) Menggunakan Metode User Experience Questionnaire (UEQ): Studi Kasus Pada Website Fakultas Teknologi Industri Universitas Islam Indonesia," *AUTOMATA*, vol. 4, no. 2, 2023.

[5] C. Putnam, M. Puthenmadom, M. A. Cuerdo, W. Wang, and N. Paul, "Adaptation of the System Usability Scale for User Testing with Children," in *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*, New York, NY, USA: ACM, Apr. 2020, pp. 1–7. doi: 10.1145/3334480.3382840.

[6] N. Juniantari and I. N. T. A. Putra, "ANALISIS SISTEM INFORMASI DPMPTSP MENGGUNAKAN METODE USER EXPERIENCE QUESTIONNAIRE," *JIKO (Jurnal Inform. dan Komputer)*, vol. 4, pp. 31–37, Apr. 2021, doi: 10.33387/jiko.v4i1.2379.

[7] M. Fajaria and K. D. Tania, "EVALUASI USER EXPERIENCE DAN USABILITY SISTEM INFORMASI AKADEMIK MENGGUNAKAN METODE USER EXPERIENCE QUESTIONNAIRE DAN SYSTEM USABILITY SCALE," *JOISIE (Journal Inf. Syst. Informatics Eng. Vol 7 No 2 (2023)DO - 10.35145/joisie.v7i2.3812* , Dec. 2023, [Online]. Available: https://ejournal.pelitaindonesia.ac.id/ojs32/index.php/JOISIE/article/view/3812

[8] A. Hinderks, M. Schrepp, F. J. Domínguez Mayo, M. J. Escalona, and J. Thomaschewski, "Developing a UX KPI based on the user experience questionnaire," *Comput. Stand. Interfaces*, vol. 65, pp. 38–44, Jul. 2019, doi: 10.1016/j.csi.2019.01.007.

[9] D. Wulan, Syaifullah, E. Saputra, M. Rahmawita, and A. Marsal, "Analysis of User Experience of the CapCut Application in Generation Z for Social Media Content Using the User Experience Questionnaire Method," *Sci. J. Informatics*, vol. 11, no. 3, pp. 721–732, Aug. 2024, doi: 10.15294/sji.v11i3.7543.

[10] A. Munawar, U. Hayati, and R. Dana, "ANALISIS PENGGUNAAN APLIKASI KEHADIRAN PEGAWAI BERBASIS ANDROID MENGGUNAKAN METODE SYSTEM USABILITY SCALE," *JATI (Jurnal Mhs. Tek. Inform.*, vol. 7, pp. 255–261, Feb. 2023, doi: 10.36040/jati.v7i1.6213.

[11] E. Kaban, K. C. Brata, and A. H. Brata, "Evaluasi Usability Menggunakan Metode System Usability Scale (SUS) Dan Discovery Prototyping Pada Aplikasi PLN Mobile (Studi Kasus Pt. PLN)," *J. Pengemb. Teknol. Inf. dan Ilmu Komput.*, vol. 4, no. 10 SE-, pp. 3281–3290, Sep. 2020, [Online]. Available: https://j-ptiik.ub.ac.id/index.php/j-ptiik/article/view/7941

[12] R. Hiariej and N. Setiyawati, "EVALUASI USER EXPERIENCE DAN USABILITY SISTEM INFORMASI TUGAS AKHIR FTI UKSW MENGGUNAKAN USER EXPERIENCE QUESTIONNAIRE DAN SYSTEM USABILITY SCALE," *JOISIE (Journal Inf. Syst. Informatics Eng. Vol 6 No 2 (2022)DO - 10.35145/joisie.v6i2.2338* , Dec. 2022, [Online]. Available: https://ejournal.pelitaindonesia.ac.id/ojs32/index.php/JOISIE/article/view/2338

[13] S. F. Novitasari, Y. T. Mursityo, and A. N. Rusydi, "Evaluasi Pengalaman Pengguna Pada E-Commerce Sociolla.Com Menggunakan Usability Testing Dan User Experience Questionnaire (Ueq)," *J. Sist. Informasi, Teknol. Informasi, dan Edukasi Sist. Inf.*, vol. 1, no. 2, pp. 57–63, 2020, doi: 10.25126/justsi.v1i2.9.

[14] W. A. Febrianto, W. H. N. Putra, and A. R. Perdanakusuma, "Analisis Pengalaman Pengguna Aplikasi Sistem Informasi Puskesmas Paperless menggunakan Metode Usability Testing dan User Experience Questionnaire (UEQ) (Studi Kasus : Puskesmas Tarik Kabupaten Sidoarjo)," *J. Pengemb. Teknol. Inf. dan Ilmu Komput.*, vol. 3, no. 6 SE-, pp. 6099–6106, Jul. 2019, [Online]. Available: https://j-ptiik.ub.ac.id/index.php/j-ptiik/article/view/5648

[15] P. Kortum, C. Z. Acemyan, and F. L. Oswald, "Is It Time to Go Positive? Assessing the Positively Worded System Usability Scale (SUS)," *Hum. Factors J. Hum. Factors Ergon. Soc.*, vol. 63, no. 6, pp. 987–998, Sep. 2021, doi: 10.1177/0018720819881556.

[16] I. K. Putri, S. H. Wijoyo, and Y. T. Mursityo, "Analisis Usability dan Pengalaman Pengguna Pada Aplikasi pemesanan Budget Hotel Menggunakan User Experience questionnaire (UEQ) (Studi Kasus Pada Airy Rooms)," *J. Pengemb. Teknol. Inf. dan Ilmu Komput.*, vol. 3, no. 7, pp. 6748–6756, 2019, [Online]. Available: https://j-ptiik.ub.ac.id/index.php/j-ptiik/article/view/5800

[17] D. Khuntari, "Analisis Pengalaman Pengguna Aplikasi Gojek dan Grab dengan Pendekatan User Experience Questionnaire," *J. Tek. Inform. dan Sist. Inf.*, vol. 8, Apr. 2022, doi: 10.28932/jutisi.v8i1.4499.

[18] R. P. Sari and S. Rasio Henim, "Measurement and Analysis of Tourism Website User Experience Using Usability Techniques," *J. Appl. Eng. Technol. Sci.*, vol. 4, no. 1, pp. 539–546, Dec. 2022, doi: 10.37385/jaets.v4i1.1343.

[19] Ali Ibrahim, Onkky Alexander, Ken Ditha Tania, Pacu Putra, and Allsela Meiriza, "Assessing User

Experience and Usability in the OVO Application: Utilizing the User Experience Questionnaire and System Usability Scale for Evaluation," *J. RESTI (Rekayasa Sist. dan Teknol. Informasi)*, vol. 7, no. 4, pp. 953–963, Aug. 2023, doi: 10.29207/resti.v7i4.5137.

[20] S. Anjani, N. D. Dantes, and G. Artawan, "PENGARUH IMPLEMENTASI GERAKAN LITERASI SEKOLAH TERHADAP MINAT BACA DAN KEMAMPUAN MEMBACA PEMAHAMAN SISWA KELAS V SD GUGUS II KUTA UTARA," 2019. [Online]. Available: https://api.semanticscholar.org/CorpusID:210005176

[21] I. Imron, "Analisa Pengaruh Kualitas Produk Terhadap Kepuasan Konsumen Menggunakan Metode Kuantitatif Pada CV. Meubele Berkah Tangerang," *Indones. J. Softw. Eng.*, vol. 5, no. 1, pp. 19–28, Jun. 2019, doi: 10.31294/ijse.v5i1.5861.

[22] A. S. Oktavia, R. W. Lestari, and A. Nugroho, "Analisis Pengalaman Pengguna Aplikasi Transportasi Umum dengan Metode User Experience Questionnaire," *J. Teknol. Dan Sist. Inf. Bisnis*, vol. 6, no. 1, pp. 76–83, Jan. 2024, doi: 10.47233/jteksis.v6i1.1094.

[23] S. R. Henim and R. P. Sari, "Evaluasi User Experience Sistem Informasi Akademik Mahasiswa pada Perguruan Tinggi Menggunakan User Experience Questionnaire," *J. Komput. Terap.*, vol. 6, no. 1, pp. 69–78, May 2020, doi: 10.35143/jkt.v6i1.3582.

[24] F. Syakirin, M. Fronita, E. Saputra, and M. Rahmawita, "Analisis User Experience Website Digilib Menggunakan Metode Usability Testing Dan UEQ," *INOVTEK Polbeng - Seri Inform.*, vol. 8, no. 2, p. 419, Nov. 2023, doi: 10.35314/isi.v8i2.3690.

[25] R. R. Putra, R. Y. Andi, and M. M. Qusyairi, "Evaluation of Travel App's Usability Using the System Usability Scale Method," *Sci. J. Informatics*, vol. 11, no. 2 SE-Articles, pp. 439–450, May 2024, doi: 10.15294/sji.v11i2.4509.

[26] D. Yulianto, R. Hartanto, and P. I. Santosa, "Evaluation on Augmented-Reality-Based Interactive Book Using System Usability Scale and User Experience Questionnaire," *J. RESTI (Rekayasa Sist. dan Teknol. Informasi)*, vol. 4, no. 3, pp. 482–488, Jun. 2020, doi: 10.29207/resti.v4i3.1870.

[27] O. Suria, "A Statistical Analysis of System Usability Scale (SUS) Evaluations in Online Learning Platform," *J. Inf. Syst. Informatics*, vol. 6, no. 2, pp. 992–1007, Jun. 2024, doi: 10.51519/journalisi.v6i2.750.

[28] D. Supriyadi, S. Safitri, and D. Kristiyanto, "Higher Education e-Learning Usability Analysis Using System Usability Scale," Nov. 2020, doi: 10.30645/ijistech.v4i1.81.

[29] A. Kautsar and T. Wahyuningrum, "Analisis Usability pada Website Narasi.tv Menggunakan Metode Unmoderated Remote Usability Testing dan User Experience Questionnaire (UEQ)," *J. Inf. Eng. Educ. Technol.*, vol. 7, pp. 110–118, Dec. 2023, doi: 10.26740/jieet.v7n2.p110-118.

[30] F. Heri Surya Ramadhani, "ANALISA WEBSITE SISTEM AKADEMIK INSTITUT BISNIS DAN TEKNOLOGI MENGGUNAKAN METODE UEQ (USER EXPERIENCE QUESTIONNAIRE)," *J. SATYA Inform.*, vol. 8, no. 01, pp. 95–103, Jun. 2023, doi: 10.59134/jsk.v8i01.243.

[31] N. O. Syamsiah, I. Purwandani, S. Nurwahyuni, and M. Rosmiati, "Pemanfaatan User Experience Questionare Dalam Analisis Pengalaman Pengguna MyBSI E-Learning System," *MULTINETICS*, vol. 9, no. 2, pp. 108–117, Jan. 2024, doi: 10.32722/multinetics.v9i2.6352.

[32] B. O. Lubis, A. Salim, and J. Jefi, "Evaluasi Usability Sistem Aplikasi Mobile JKN Menggunakan Use Questionnaire," *J. SAINTEKOM*, vol. 10, no. 1, p. 65, Mar. 2020, doi: 10.33020/saintekom.v10i1.131.

[33] M. A. Maricar, D. Pramana, and D. R. Putri, "Evaluasi Penggunaan SLiMS pada E-Library dengan Menggunakan User Experience Question (EUQ)," *J. Teknol. Inf. dan Ilmu Komput.*, vol. 8, no. 2, pp. 319–328, 2021, doi: 10.25126/jtiik.2021824443.

[34] M. Schrepp, A. Hinderks, and J. Thomaschewski, "Construction of a Benchmark for the User Experience Questionnaire (UEQ)," *Int. J. Interact. Multimed. Artif. Intell.*, vol. 4, no. 4, p. 40, 2017, doi: 10.9781/ijimai.2017.445.

[35] M. Schrepp, "User Experience Questionnaire Handbook Version 8," *1-5*, 2019. https//www. Res. net/publication/303880829_User_Experience_Questionnaire_Handbook_Version_2 (accessed Feb. 02, 2017).

[36] M. Schrepp, A. Hinderks, and J. Thomaschewski, "Applying the User Experience Questionnaire (UEQ) in Different Evaluation Scenarios," 2014, pp. 383–392. doi: 10.1007/978-3-319-07668-3_37.

[37] K. Na-nan and S. Saribut, "Development and validation of an organisational commitment instrument for generation Y employees in small and medium-sized enterprises in Thailand," *Ind. Commer. Train.*, vol. 51, pp. 244–255, May 2019, doi: 10.1108/ICT-11-2018-0091.