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Usability Evaluation of ASN Management System Using UEQ Method

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Abstract
This study evaluates the usability and user experience quality of the SIM-ASN system using the User Experience Questionnaire (UEQ) method. The evaluation measures six dimensions, namely attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty, to identify the strengths and weaknesses of the system from the users' perspective. This study utilizes quantitative analysis by calculating the mean score of each UEQ dimension and comparing the results with the UEQ benchmark dataset. We obtain mean scores of −0.14 for attractiveness, −0.05 for perspicuity, −0.03 for efficiency, −0.03 for dependability, −0.13 for stimulation, and −0.20 for novelty. Based on the UEQ interpretation scale, all dimensions fall within the neutral category, although several dimensions show slightly negative tendencies. Furthermore, the benchmark analysis categorizes all evaluated dimensions as "Bad," indicating that the SIM-ASN system belongs to the lowest 25% compared with other products in the UEQ benchmark dataset. These findings indicate that the current system still requires improvements in interface design, usability efficiency, interaction quality, and feature innovation to enhance user satisfaction and engagement. Thus, this study demonstrates that the UEQ method can effectively identify usability problems and provide comprehensive insights for improving the quality of government-based information systems through a user-centered evaluation approach.

Keywords:
UX, UEQ, Usability, Evaluation, SIM-ASN

1. Introduction

The rapid development of information systems in government and organizational environments increases the importance of usability and user experience as critical factors that influence system acceptance and effectiveness. Management information systems no longer function solely as data processing tools, but also as interactive platforms that support communication, administrative efficiency, and decision-making processes. Users expect systems to provide interfaces that are intuitive, responsive, and easy to operate without requiring extensive technical knowledge. When a system fails to meet these expectations, users often experience confusion, inefficiency, and dissatisfaction, which can reduce productivity and system utilization. Therefore, organizations increasingly prioritize usability evaluation to ensure that information systems align with user needs and provide positive interaction experiences. User-centered evaluation approaches become essential to identify interface weaknesses and improve overall service quality in digital systems. [1], [2], [11]

In the context of government institutions, ASN management systems play a strategic role in supporting personnel administration, employee monitoring, attendance management, and performance evaluation. These systems directly affect administrative

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efficiency and employee productivity because civil servants rely on them for daily operational activities. However, many ASN management systems still experience interface complexity, inconsistent navigation structures, and limited responsiveness that negatively affect user satisfaction. Several studies on employee management information systems reveal that users frequently encounter difficulties when accessing menus, completing tasks, or understanding system workflows. These issues reduce operational efficiency and create resistance toward digital transformation initiatives within institutions. Consequently, evaluating usability and user experience becomes important to ensure that ASN management systems can effectively support administrative services and improve employee interaction quality. [6], [7]

User experience evaluation has become an important research topic because traditional functionality testing alone cannot fully measure the quality of user interaction. Researchers increasingly use the UEQ method because it evaluates both pragmatic aspects, such as efficiency and dependability, and hedonic aspects, such as stimulation and attractiveness. The UEQ method allows researchers to obtain quantitative insights regarding user perceptions toward digital systems while also identifying areas requiring improvement. Previous studies demonstrate that UEQ provides comprehensive evaluation results for web-based and mobile-based applications across different sectors. In addition, the method supports comparative analysis through benchmark scoring, making it easier to determine whether a system performs below average or above standard usability expectations. These advantages make UEQ highly suitable for evaluating ASN management systems that require both functional effectiveness and positive user engagement. [3], [4], [5]

Several previous studies confirm the effectiveness of the UEQ method in evaluating applications and identifying usability problems in digital platforms. Research on the KAI Access application shows that although the application performs well in efficiency and reliability, users still report weaknesses related to interface responsiveness and interaction consistency. Similar findings appear in studies evaluating mobile banking applications, where users express satisfaction with system functionality but identify shortcomings in interface simplicity and navigation clarity. These studies indicate that even highly functional systems may still provide unsatisfactory user experiences if interface design elements fail to support intuitive interaction. The results also emphasize that usability evaluation should not only focus on technical functionality but also consider emotional and experiential dimensions that influence long-term user acceptance. [13], [15], [19]

Studies integrating UEQ with additional usability approaches further demonstrate the importance of comprehensive evaluation methods in identifying interface problems. Research combining UEQ with heuristic evaluation, remote usability testing, and eye-tracking methods reveals that user experience issues often originate from visual layout inconsistencies, confusing workflows, and inefficient task execution processes. These integrated approaches provide deeper insights because they combine subjective user perceptions with observable interaction behavior. For example, eye-tracking analysis identifies user attention patterns during navigation tasks, while heuristic evaluation highlights violations of usability principles. Such findings suggest that evaluating ASN management systems should involve multidimensional usability analysis to identify both surface-level and structural interface issues that may reduce employee efficiency and satisfaction. [14], [16], [21]

The increasing adoption of digital public services also raises user expectations regarding interface quality and interaction convenience. Modern users compare government systems not only with other administrative platforms but also with commercial applications that offer seamless digital experiences. Research on e-wallet, e-learning, and digital wallet platforms demonstrates that attractive visual design, efficient navigation, and responsive interaction significantly influence user trust and engagement. Studies on ShopeePay and Ruangguru reveal that systems with strong emotional engagement and

intuitive design produce higher satisfaction levels and encourage continuous usage behavior. These findings indicate that government-based systems, including ASN management systems, must improve interface quality to meet evolving user expectations and maintain service effectiveness in increasingly digital work environments. [12], [17], [18]

Despite the growing number of usability studies, research specifically focusing on ASN management systems using the UEQ method remains limited. Most previous studies concentrate on mobile banking, e-commerce, educational platforms, or public information applications, while government personnel systems receive relatively less attention. In practice, ASN management systems involve complex administrative workflows that differ significantly from commercial applications because they support hierarchical processes, formal documentation, and employee performance management. This complexity creates unique usability challenges that require specific evaluation approaches. Therefore, conducting usability evaluation research on ASN management systems becomes important to identify user difficulties, measure user satisfaction, and generate recommendations for improving interface quality and operational effectiveness in government digital services. [6], [7], [20]

Based on these issues, this study evaluates the usability and user experience of the ASN Management System using the UEQ method. This study aims to measure user perceptions across multiple UEQ dimensions, including attractiveness, efficiency, dependability, perspicuity, stimulation, and novelty, to identify the strengths and weaknesses of the system interface. The study also seeks to provide practical recommendations for improving user interaction quality and supporting more effective digital administrative services. By applying the UEQ method to an ASN management environment, this research contributes to the development of user-centered government information systems and expands the implementation of usability evaluation methods in the public sector context. [3], [12], [20].

2. Related Works

Previous studies widely applied the UEQ method to evaluate digital platforms and information systems. Wijaya et al. evaluated the PaTik Bali application using UEQ and found that users responded positively to attractiveness and efficiency aspects, although several interface elements still required improvement in navigation clarity and interaction consistency. The study demonstrated that UEQ effectively measured user perception across multiple dimensions of interaction quality. However, the research focused mainly on public service applications and did not analyze complex administrative workflows such as personnel management systems. This limitation indicated the need for further studies in organizational and employee-oriented systems. [3]

Pangestu et al. implemented UEQ to evaluate a Virtual Campus Tour platform and reported that the system achieved good scores in stimulation and attractiveness. The study highlighted that visual appearance and interactive features strongly influenced user satisfaction and engagement. The researchers also emphasized that UEQ provided a comprehensive framework for measuring both pragmatic and hedonic aspects of user interaction. Despite these findings, the study mainly focused on educational visualization systems and did not examine operational efficiency in systems with intensive administrative tasks. Therefore, the applicability of the findings to ASN management systems remained limited. [4]

Fatmawati et al. evaluated the Bombanakab.go.id government website using the UEQ method and identified several usability weaknesses related to efficiency and dependability. The study showed that users experienced difficulties in finding information due to inconsistent navigation structures and unclear menu hierarchies. The researchers successfully demonstrated that government digital services required user-centered evaluation to improve interaction quality. However, the evaluation concentrated on

informational websites rather than integrated management systems that support transactional and administrative activities. As a result, the study did not fully address usability challenges in personnel management environments. [5]

Rahmanda et al. analyzed an employee management information system using the System Usability Scale (SUS) method and found that the system achieved acceptable usability performance. The study confirmed that usability evaluation could identify operational inefficiencies affecting employee productivity. Nevertheless, SUS primarily measured general usability perception and did not evaluate emotional or experiential dimensions in detail. This limitation reduced the ability of the study to capture deeper user interaction experiences. Compared with UEQ, the evaluation lacked multidimensional assessment covering attractiveness, stimulation, and novelty aspects that are important in modern digital systems. [6]

Budiman and Ariandi investigated user experience in an employee management information system and found that users frequently experienced difficulties related to interface complexity and workflow efficiency. The study emphasized that employee-oriented systems required intuitive navigation and clear interaction patterns to support daily administrative activities. The researchers concluded that poor interface organization negatively affected employee satisfaction and operational performance. Although the study provided valuable insights regarding usability problems in management systems, it did not use a standardized evaluation framework such as UEQ. Consequently, the measurement of user experience dimensions remained less comprehensive and more subjective. [7]

Setiawan et al. proposed a UI redesign approach using the UEQ+ method combined with Design Thinking for e-wallet applications. Their study successfully improved user satisfaction by redesigning interface components based on empirical evaluation results. The researchers demonstrated that integrating usability evaluation with iterative design processes produced measurable improvements in user trust, efficiency, and interaction quality. The strength of the study lay in its practical redesign recommendations supported by quantitative UEQ+ analysis. However, the research focused on fintech applications that involved simpler workflows compared with ASN management systems, which generally contain more complex administrative processes and hierarchical data structures. [12]

Maulidya et al. evaluated the KAI Access application using UEQ and found that the application performed well in efficiency and reliability but still showed weaknesses in responsiveness and interface consistency. The study highlighted that even widely used digital platforms could experience usability problems that affect user convenience and satisfaction. The researchers successfully identified specific interaction areas requiring improvement through UEQ dimension analysis. Nevertheless, the study mainly addressed consumer-oriented transportation services and did not explore usability challenges in organizational information systems with formal administrative procedures and role-based access structures. [13]

Several studies combined UEQ with additional usability evaluation methods to obtain deeper analysis results. Widyasari et al. integrated heuristic evaluation, performance measurement, and UEQ to analyze the iKalbar application and identified both interface-level and task-level usability issues. Similarly, Rahmawati et al. combined remote usability testing with UEQ to evaluate user interaction behavior and subjective experience simultaneously. Sunandar et al. also integrated Cognitive Walkthrough and UEQ to identify severe usability problems affecting user perception. These studies demonstrated that combining UEQ with complementary methods increased evaluation depth and improved problem identification accuracy. However, most of these studies focused on mobile applications and public service systems rather than ASN management systems that involve employee administration and organizational workflows. This gap indicated the importance of conducting usability evaluation specifically in ASN management environments using the UEQ approach. [14], [16], [20].

3. Proposed Method

This study evaluates the usability of the SIM-ASN system used at DBMSDA Tangerang City using the UEQ method. The UEQ is a standardized instrument designed to measure user experience in interactive systems based on several dimensions of user perception and interaction quality [3]. User experience refers to the overall perception and response of users resulting from the interaction with a system, including aspects related to usability, efficiency, and user satisfaction [2]. Evaluating user experience is important to determine whether the system provides effective and comfortable interaction for users.

The UEQ method measures user experience based on six dimensions that represent both pragmatic and hedonic qualities of a system. These dimensions include attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty [3]. Each dimension represents a different aspect of user perception when interacting with a digital system.

Table 1. UEQ Dimensions

Dimension	Description
Attractiveness	Overall impression of the system
Perspicuity	Ease of understanding and learning the system
Efficiency	Ability of the system to help users complete tasks quickly
Dependability	User control and system reliability
Stimulation	Motivation and enjoyment when using the system
Novelty	Level of creativity and innovation of the system

The evaluation results are calculated by determining the mean score of each UEQ dimension based on the responses given by the respondents. The mean value is calculated using Equation (1).

$$\overline{x} = \frac{\sum_{i}^{n=1} x_i}{n} \quad (1)$$

where $\overline{x}$ represents the mean value of a UEQ dimension, x_i represents the score given by respondent i , and n represents the total number of respondents.

The overall research process carried out in this study is illustrated in Fig. 1. The figure describes the main stages of the research, starting from problem identification, data collection, questionnaire design, population and sample determination, data processing and analysis, and finally result interpretation.

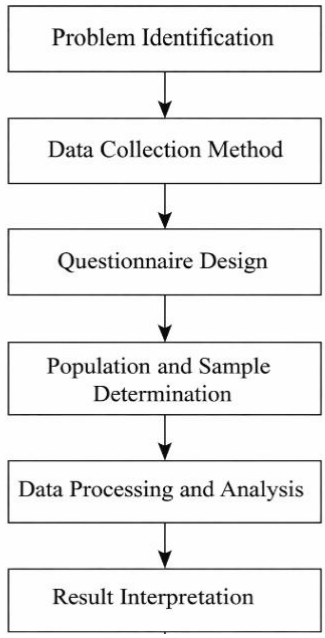

Fig. 1. Research methodology

4. Experimental Setup

This study was conducted to evaluate the user experience of the SIM-ASN system implemented at DBMSDA Tangerang. Data collection was carried out through observation, literature review, and questionnaire distribution. The questionnaire used in this study was the UEQ, which consists of 26 paired items representing six user experience dimensions. The questionnaire was distributed to ASN who actively use the SIM-ASN system in their daily administrative activities. The minimum number of respondents required for this study was determined using the Isaac and Michael sampling table, resulting in a minimum requirement of 105 respondents. After the data collection process, a total of 108 valid responses were obtained and used in the analysis.

A. Respondent Characteristics

The demographic characteristics of the respondents involved in this study are presented in Table 2.

Table 2. Respondent Characteristics

Category	Description	Total	Percentage
Gender	Male	73	67.59%
	Female	35	32.41%
Age	< 20 years	1	0.93%
	20–30 years	22	20.37%
	30–40 years	28	25.93%
	40–50 years	28	25.93%
	> 50 years	29	26.85%
System Usage	≤ 3 months	2	1.85%

Category	Description	Total	Percentage
	≤ 6 months	6	5.56%
	≤ 1 year	11	10.19%
	≥ 2 years	89	82.41%

The results indicate that most respondents have more than two years of experience using the SIM-ASN system, which suggests that respondents are familiar with the system and able to provide reliable evaluations.

B. Instrument Testing

Before performing the UEQ analysis, the questionnaire instrument was evaluated using validity and reliability testing to ensure that the instrument accurately measures the intended variables. The validity test was conducted using Pearson Bivariate Correlation by comparing the calculated correlation value with the r-table value. An item is considered valid if the calculated correlation value is greater than the r-table value. The reliability test was conducted using Cronbach's Alpha to measure the consistency of the questionnaire instrument. A questionnaire is considered reliable if the Cronbach's Alpha value is greater than 0.7 [9]. The results of the reliability test are presented in Table 3.

Table 3. Reliability Test Results

Variable	Cronbach's Alpha
Attractiveness	0.760
Perspicuity	0.703
Efficiency	0.722
Dependability	0.725
Stimulation	0.724
Novelty	0.711

The results show that all variables have Cronbach's Alpha values above 0.7, indicating that the questionnaire instrument used in this study is reliable.

5. Result and Analysis

A. UEQ Mean Results

The mean scores obtained for each UEQ dimension are presented in Table 4.

Table 4. Mean Scores of UEQ Dimensions

UEQ Dimension	Mean
Attractiveness	-0.14
Perspicuity	-0.05
Efficiency	-0.03
Dependability	-0.03
Stimulation	-0.13
Novelty	-0.20

Based on the UEQ interpretation scale, a value greater than 0.8 indicates a positive evaluation, a value between −0.8 and 0.8 indicates a neutral evaluation, and a value below −0.8 indicates a negative evaluation. The results show that all UEQ dimensions fall within the range −0.8 to 0.8, which indicates a neutral evaluation of the SIM-ASN system.

However, several dimensions such as attractiveness, stimulation, and novelty show slightly negative values, indicating that improvements are still required in terms of user interface design and system interaction.

The visualization of the UEQ mean results is illustrated in Fig. 2.

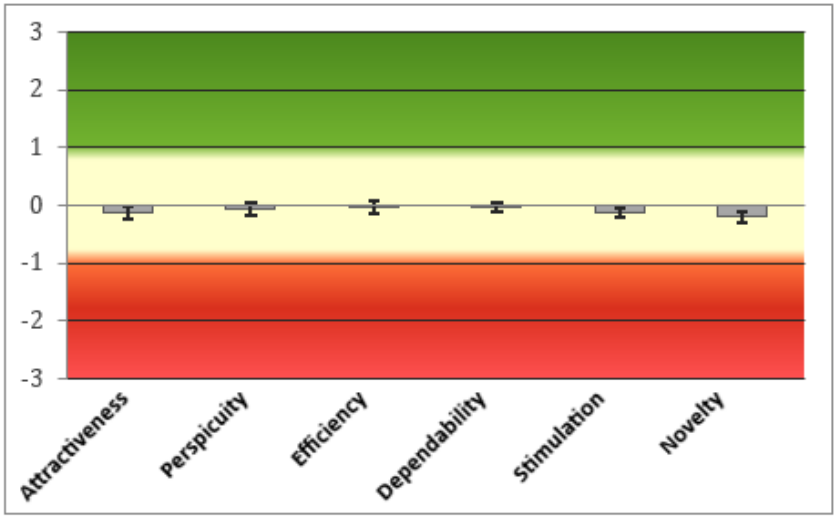

Fig. 2. UEQ mean results

B. UEQ Benchmark Analysis

To further evaluate the relative quality of the SIM-ASN system, the obtained UEQ scores were compared with the UEQ benchmark dataset, which contains evaluation results from various digital products that have been previously analyzed using the UEQ method. The benchmark comparison results are presented in Table 5.

Table 5. UEQ Benchmark Category

Dimension	Mean	Benchmark Category
Attractiveness	-0.14	Bad
Perspicuity	-0.05	Bad
Efficiency	-0.03	Bad
Dependability	-0.03	Bad
Stimulation	-0.13	Bad
Novelty	-0.20	Bad

Based on Table V, all evaluated UEQ dimensions fall into the “Bad” category according to the UEQ benchmark classification. This category represents the lowest 25% of results compared to other products within the UEQ benchmark dataset. The visualization of the UEQ benchmark results is presented in Fig. 3, which illustrates the mean score obtained for each UEQ dimension.

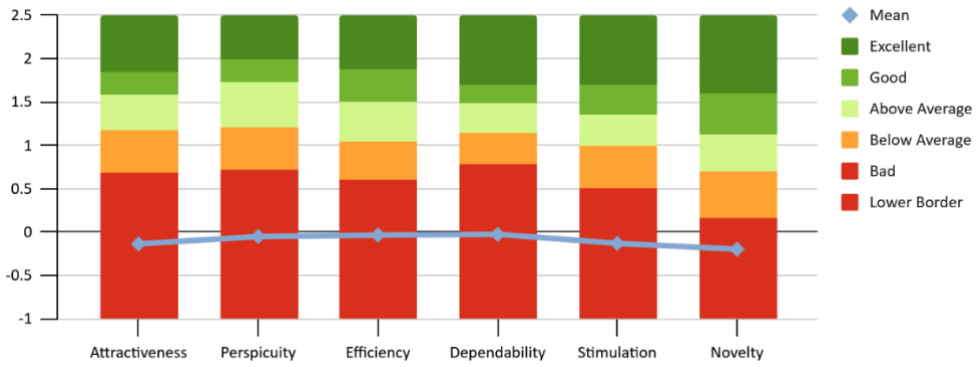

Fig. 3. UEQ benchmark visualization

Based on the benchmark comparison, all UEQ dimensions including attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty obtained mean values that fall within the neutral range but tend toward negative values. These results indicate that the current user experience quality of the SIM-ASN system still requires improvement. The benchmark evaluation suggests that improvements in interface design, usability efficiency, and system interaction are necessary to enhance the overall user experience of the system and to achieve better evaluation results in future assessments.

The results of the UEQ evaluation indicate that the overall user experience quality of the SIM-ASN system still requires improvement. Although all evaluated dimensions fall within the neutral range, several dimensions show slightly negative values, particularly attractiveness, stimulation, and novelty. These results suggest that the current system interface may not provide sufficient visual appeal or interactive experience for users. In addition, the limited level of system stimulation and innovation may reduce user engagement when interacting with the system.

The benchmark analysis further confirms that the overall user experience quality of the SIM-ASN system is categorized as Bad, meaning that its evaluation results fall within the lowest 25% compared with other products included in the UEQ benchmark dataset. This condition highlights the need for improvements in several aspects of the system. Therefore, improvements in interface design, system interaction, and feature innovation are recommended to enhance the overall user experience of the SIM-ASN system. Improving these aspects is expected to increase user satisfaction and support more efficient interaction with the system in the future.

6. Conclusion

This paper utilized the UEQ method to evaluate the usability and overall user experience quality of the SIM-ASN system across six dimensions: attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. Based on the evaluation results, we obtained mean scores ranging from −0.20 to −0.03, where all dimensions fell within the neutral interpretation range according to the UEQ scale. Although the results did not indicate severe usability problems, several dimensions such as attractiveness, stimulation, and novelty showed slightly negative tendencies. These findings indicate that the current SIM-ASN system still lacks visual appeal, interactive engagement, and innovative user experience elements that can improve user satisfaction during system interaction. In addition, the results suggest that users perceive the system as functionally acceptable, but not yet capable of delivering a highly positive or memorable interaction experience.

To further analyze the relative quality of the system, this study applied UEQ benchmark analysis by comparing the obtained scores with standardized benchmark datasets from previously evaluated digital products. The benchmark results revealed that all UEQ dimensions were categorized as “Bad,” indicating that the SIM-ASN system belongs to the lowest 25% of products within the UEQ benchmark classification. This finding confirms that the overall user experience quality of the system remains below the expected standard compared with other digital applications. We observed that the low benchmark scores were strongly associated with weaknesses in interface design consistency, interaction responsiveness, usability efficiency, and feature innovation. Furthermore, the slightly negative scores in attractiveness and novelty suggest that the interface design does not yet provide a modern and engaging appearance, which may reduce user motivation and comfort during system usage.

According the findings, this study demonstrates that the SIM-ASN system still requires substantial improvements to enhance its usability and user experience quality. We conclude that improving interface aesthetics, navigation clarity, interaction responsiveness, and feature innovation is essential to increase user satisfaction and support more effective administrative activities. This study also confirms that the UEQ method provides comprehensive evaluation results by measuring both pragmatic and hedonic aspects of user interaction. The findings can therefore serve as an important reference for developers and institutions in redesigning and optimizing the SIM-ASN system based on user-centered design principles. Future improvements are expected to produce a more efficient, attractive, and engaging system that better supports employee interaction and organizational digital services.

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