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USABILITY EVALUATION OF ASTRO APPLICATION USING SYSTEM USABILITY SCALE METHOD

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Abstract

Technological advancements have driven the high usage of online shopping applications like ASTRO to quickly fulfill daily needs. This study aims to evaluate the usability level of the ASTRO application based on direct user experiences by applying the System Usability Scale (SUS) method. A quantitative approach was utilized, gathering data through questionnaires distributed to 111 users of the application. The ten SUS statement items used as instruments were confirmed for their validity and reliability, evidenced by the calculated r-value exceeding the r-table (0.186) and a Cronbach's Alpha score of 0.913. Based on the data analysis, the average SUS score was found to be 71.89. This score places the application in the Acceptable category, earning a Grade C and a Good Adjective Rating. These findings confirm that, overall, the ASTRO application has a good usability level and is easily accepted by users for online shopping. Nevertheless, there is still room for improvement in several usability aspects to maximize user comfort in the future.
Keywords: *ASTRO Application; System Usability Scale; Usability Evaluation*

Abstrak

Perkembangan teknologi mendorong tingginya pemakaian aplikasi belanja daring seperti ASTRO untuk memenuhi kebutuhan harian dengan cepat. Penelitian ini bertujuan mengevaluasi tingkat kegunaan (usability) dari aplikasi ASTRO berdasarkan pengalaman langsung para penggunanya dengan menerapkan metode System Usability Scale (SUS). Pendekatan kuantitatif digunakan dalam riset ini, di mana data dikumpulkan melalui kuesioner yang disebarkan kepada 111 responden pengguna aplikasi tersebut. Sepuluh butir pernyataan SUS yang dipakai sebagai instrumen telah dipastikan validitas serta reliabilitasnya, terbukti dari nilai r hitung yang melampaui r tabel (0,186) dan perolehan Cronbach's Alpha di angka 0,913. Dari hasil pengolahan data, ditemukan bahwa rata-rata skor SUS berada di angka 71,89. Angka ini menempatkan aplikasi dalam kategori Acceptable dengan Grade C dan Adjective Rating Good. Temuan ini mengonfirmasi bahwa secara umum, aplikasi ASTRO sudah memiliki tingkat kegunaan yang baik dan bisa diterima dengan mudah oleh masyarakat untuk berbelanja. Walau begitu, masih ada ruang perbaikan pada beberapa aspek usability agar kenyamanan pengguna bisa lebih maksimal di masa mendatang.
Kata Kunci: Aplikasi ASTRO; Evaluasi Usability; System Usability Scale

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I. INTRODUCTION

The advancement of information technology, coupled with widespread internet penetration, has drastically changed how people fulfill their daily necessities, including their shopping behaviors. Currently, daily online grocery applications like ASTRO are increasingly favored by urban communities because they offer practicality and rapid delivery times. This shift toward digital lifestyles is highly evident in the Greater Jakarta (Jadetabek) area, which boasts one of the highest adoption rates for online services in Indonesia. In a fiercely competitive digital climate, product completeness and cheap prices are no longer sufficient; the comfort of interaction and ease of use (usability) have become determining factors in whether users will remain loyal to an application or switch to competitors.

Conceptually, usability reflects how simply a system can be learned, understood, and utilized by its users. A high level of usability directly correlates with time efficiency, the effectiveness of achieving user goals, and overall satisfaction. Ideally (*das sollen*), as a platform relying on the speed and fluidity of daily grocery transactions, ASTRO should provide an intuitive and seamless navigation experience for its urban users. In reality (*das sein*), however, a review of user feedback on Google Play and the App Store reveals numerous complaints regarding the user interface, navigational confusion, and slow application responsiveness. This gap has the potential to negatively affect user satisfaction and service effectiveness if not promptly and systematically evaluated. To understand how usability evaluation methods have been applied, reviewing previous studies (state of the art) is highly essential. Various studies have proven that the System Usability Scale (SUS) instrument is highly reliable and flexible for quickly measuring user perceptions. For instance, an evaluation of the financial service application OVO yielded an acceptable score of 69.23, though it still left room for interface improvements. Another study on the PeduliLindungi platform demonstrated the vitality of such evaluations, where the application's score surged from 65.64 to 81 following user-feedback-based improvements. The SUS method has also proven successful in analyzing usability across other sectors, ranging from entertainment applications like the PUBG Mobile game with a score of 76.93, ticketing services scoring 55.55, to campus administrative systems reaching an impressive score of 84.5. From these literatures, it is evident that usability measurement using the SUS method on a high-speed online grocery application like ASTRO, specifically targeting the busy demographic of the Jadetabek area, has never been thoroughly studied. The characteristics of grocery services demand a much more complex transaction speed than regular e-commerce, presenting entirely different usability challenges. Therefore, this study aims to evaluate the usability level of the ASTRO

application in the Jadetabek area using the SUS method, determine its numerical score, and formulate concrete recommendations for the development team so that system quality and user experience can be continuously improved in the future.

II. THEORETICAL REVIEW

Usability serves as a fundamental aspect in system development, functioning as a crucial measure to determine how easily users can learn, comprehend, and utilize an application. When an application possesses a high level of usability, users have a greater probability of completing their tasks effectively, efficiently, and comfortably. Conversely, a low usability level may cause users to encounter difficulties when navigating various features, which subsequently degrades their overall satisfaction. The evaluation of usability is fundamentally aimed at assessing the quality of interaction between the user and the system, which is reflected through three primary dimensions, namely: a. effectiveness; b. efficiency, and c. user satisfaction. Testing these elements ensures that the application's interface truly meets the functional needs of the users while simultaneously guaranteeing the overall quality of the user experience. In the context of modern digital commerce, the rapid advancement of information technology has shifted community behaviors toward utilizing online shopping applications to fulfill daily household necessities. One prominent example of this technological adoption in Indonesia is ASTRO, an online supermarket platform that provides fast delivery services for daily groceries. Operating extensively in urban regions with high mobility, such as the Greater Jakarta area, the application allows customers to procure their household needs without physically visiting a store. Because of this fast-paced operational nature, the usability aspect becomes exceptionally critical, as the platform's competitiveness is determined not only by product completeness or pricing but also by how easily and comfortably users can interact with the system.

To systematically measure these usability factors, the System Usability Scale (SUS) is utilized as a reliable and efficient evaluation instrument. SUS is recognized as a computer system usability testing tool centered on the user's perspective, distinguished by its concise and straightforward format. The instrument comprises ten standard statements that are answered using a five-point Likert scale. The scoring mechanism follows specific rules where odd-numbered statements, which are positive, are calculated by subtracting one from the respondent's answer, whereas even-numbered statements, which are negative, are calculated by subtracting the respondent's answer from five. The sum of these calculations is then multiplied by a constant of 2.5 to yield a final score ranging from 0 to 100. This standardized

numeric output makes it highly practical for system developers to interpret the measurement results through established categories, including acceptability levels, grade scales, and adjective ratings, thereby providing a clear foundation for future usability improvements.

III. RESEARCH METHODS

This study applies a quantitative approach with the research specification being a usability evaluation utilizing the System Usability Scale (SUS) method to measure the usability level of the ASTRO application. The type of research is descriptive quantitative, wherein the data collection technique was conducted by distributing online questionnaires via Google Form to ASTRO application users residing in the Jadetabek area. The sampling technique implemented was purposive sampling, specifically targeting individuals with a minimum experience of one transaction using the application, which successfully resulted in 111 valid respondents whose data could be processed. The research instrument utilized ten standard SUS statement items with a one-to-five Likert scale, which were adapted into Indonesian without altering their original psychometric structure. Furthermore, the data analysis method was executed systematically using IBM SPSS Statistics software to test validity through the Pearson Product Moment by comparing the calculated r-value against an r-table value of 0.186, as well as conducting a reliability test using Cronbach's Alpha with a minimum acceptable threshold of 0.70. After ensuring the instrument was completely valid and reliable, data processing proceeded by calculating the SUS score for each respondent through the odd-even scoring rule, and the sum was then multiplied by a constant of 2.5 to generate a final value range from 0 to 100. The analysis method concluded by interpreting the overall average score based on Acceptability, Grade Scale, and Adjective Rating categories to draw an objective and structured evaluation conclusion.

IV. RESULTS

The data collection process conducted through the distribution of online questionnaires successfully garnered 114 respondents. However, based on the initial screening stage regarding user experience with the ASTRO application, three respondents did not meet the criteria as they had never used the service. Consequently, the data declared valid and eligible for further analysis amounted to 111 respondents. Based on demographic profiles, these users were dominated by the female group with a percentage reaching 61.3%, while males accounted for 38.7%. In terms of age, the majority of respondents fell into the productive age range, namely 26 to 30 years old at 42.3%, followed by the 20 to 25 years old age group at 37.8%. Their occupational profiles were quite diverse, where the largest proportion was filled by employees

at 29.2%, housewives at 27.4%, and students comprising 25.7%. Judging from their usage history, the largest segment had utilized this application for the past four to six months, with the most frequent transaction rate ranging between one to two usages.

1. Respondent Statistics Table

	Gender	Age	Occupation	How long have you been using the ASTRO application?	How many times have you made transactions using the ASTRO application?
N Valid	**111**	**111**	**111**	**111**	**111**
N Missing	**0**	**0**	**0**		

Before user perception data could be further calculated, the reliability of the measuring tools had to be proven through validity and reliability testing. The validity test was conducted utilizing the Pearson Product Moment method, which compares the calculated r-value of each statement with the r-table value at a specific degree of freedom. With a sample size of 111 respondents, the reference r-table value was 0.186. The statistical analysis results demonstrated that all ten questionnaire statements possessed calculated r-values that significantly exceeded the r-table figure, thus all instruments were officially declared valid. Entering the reliability test executed via the Cronbach's Alpha method, a figure of 0.913 was obtained. Considering this value is substantially above the minimum acceptability threshold of 0.70, the questionnaire instrument could be concluded as highly consistent and reliable for measuring the variables of this study.

2. Validity Test Results Table

Statement	Calculated r	r-Table	Remarks
Q1	**0.741**	**0.186**	**Valid**
Q2	**0.648**	**0.186**	**Valid**
Q3	**0.719**	**0.186**	**Valid**
Q4	**0.704**	**0.186**	**Valid**
Q5	**0.676**	**0.186**	**Valid**
Q6	**0.727**	**0.186**	**Valid**

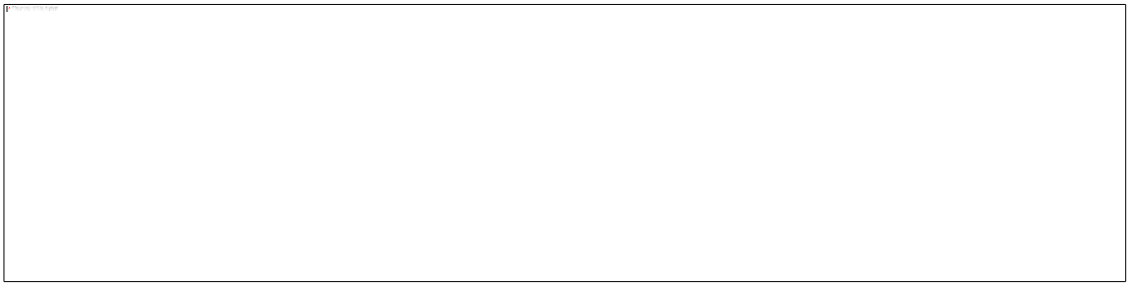
Statement	Calculated r	r-Table	Remarks
Q7	0.658	0.186	Valid
Q8	0.695	0.186	Valid
Q9	0.675	0.186	Valid
Q10	0.567	0.186	Valid

Once the instrument's quality was assured, the subsequent stage involved calculating the System Usability Scale (SUS) scores of the 111 respondents. The calculation process was performed individually using the odd-even score conversion rule, where the final value of each respondent was multiplied by a constant of 2.5. From the comprehensive calculation, it was recorded that the total accumulated score reached 7,980, with the lowest individual score at 17.50 and the highest score touching 87.50. When averaged, the overall usability score for the ASTRO application settled at 71.89 with a standard deviation of 16.87.

3. Table of SUS Calculation Score Results

Respondent	SUS Calculation Score Results											
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Sum	Score
1	1	0	2	0	1	2	3	1	2	0	12	30
2	2	2	2	1	2	2	3	2	3	2	21	52.5
3	3	3	3	4	4	3	4	3	4	0	31	77.5
4	2	1	3	1	1	2	4	1	2	3	20	50
5	3	3	3	3	4	3	3	4	3	3	32	80
6	3	3	4	3	3	4	3	3	3	4	33	82.5
7	4	3	3	3	3	3	3	4	3	3	32	80
8	3	3	3	4	3	3	3	3	4	3	32	80
9	4	3	3	3	3	4	4	3	3	3	33	82.5
10	3	1	4	3	3	3	3	3	3	3	29	72.5
….	.	.	.	.	.	.	.	.	.	.	.	.
111	1	1	0	1	1	0	2	0	1	0	7	17.5
TOTAL											3192	7980
Average Score												71,89

4. SUS Score Interpretation



The average score of 71.89 was then interpreted into the standardized SUS assessment matrix. Based on the assessment metrics, this figure successfully placed the ASTRO application into the Acceptable status category, earning a letter scale of Grade C, and bearing an Adjective Rating designated as Good. This achievement stands as empirical evidence that urban communities in the Jadetabek area consider this application system reasonably easy to learn, smooth to operate, and successful in fulfilling their daily online shopping needs. This is vividly reflected in the positive responses dominating the odd-numbered statements in the questionnaire, where the majority of respondents agreed that they did not require special guidance or repeated attempts to successfully complete their orders. While this achievement is commendable, the data distribution also revealed several minor gaps that still necessitate rectification. In several statements testing consistency and complex navigation, a portion of neutral answers was still discovered, indicating a user experience that is not yet completely uniform. Therefore, future improvements must focus on specific efforts encompassing: a. simplifying the transitional flow from the product selection stage to the payment process; b. maintaining the consistency of the interface layout across all sub-menus, and c. implementing system updates based on continuous feedback from the productive-age user demographic. This gradual evaluation is crucial so that ASTRO not only survives at an acceptable level but can also embrace a higher level of operational comfort amidst the dense competition in online groceries.

V. CONCLUSION

Based on the research and evaluation conducted among users in the Jadetabek area, it can be concluded that the ASTRO application possesses a good level of usability and is easily accepted by the public as an online shopping platform. The measurement utilizing the System Usability Scale (SUS) method on 111 respondents yielded an average score of 71.89, which places the application in the Acceptable category, earning a Grade C, and achieving an Adjective Rating of Good. This achievement proves that the ASTRO application is considered

quite practical, easy to learn, and effectively capable of facilitating users' daily grocery transaction needs without significant obstacles. Nevertheless, there remains room for system quality improvement, particularly in simplifying the transaction completion flow and maintaining interface layout consistency, to ensure a more optimal and uniform user experience across all available features. Therefore, the results of this empirical evaluation can serve as a strong foundation for the development team to continuously make enhancements so that the ASTRO application can provide increasingly competitive and satisfying services in the future.

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