

## USABILITY ANALYSIS OF WEB-BASED ANIMAL ADOPTION SYSTEM TO INCREASE USER EXPERIENCE

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**Abstract:** Usability testing of online animal adoption systems is important because it is not only related to the comfort and safety of users, but also to the welfare of the adopted animals. So far, usability testing of the animal adoption system on Eidos has not been carried out and there is a problem that there is confusion with the process flow in this animal adoption system. This usability testing uses the Heuristic Evaluation method and the System Usability Scale (SUS), which involves in-depth interviews to obtain results that are not only statistical assessments, but also deeper insights from the user's perspective. The results of the evaluation using Heuristic Evaluation obtained 59 problems, with an average severity rating of 3 or major, whose improvements have resulted in several draft design recommendations. The recommendation design has gone through final testing using the System Usability Scale (SUS) which managed to achieve a score of 78, or categorized as good, along with some minor critical feedback for system improvement. Therefore, users as a whole feel very satisfied in using the online adoption system from the results of the existing recommendation design. The implications of the resulting recommendation design have been tested for usability by three UI/UX design experts and users directly so that they can be used as a basis for developing a better online animal adoption system.

**Keywords:** animal adoption system; heuristic; prototype; system usability scale; usability

**Abstrak:** Pengujian *usability* sistem adopsi hewan secara *online* penting untuk diperhatikan karena tidak hanya berkaitan dengan kenyamanan dan keamanan penggunanya saja, tetapi juga meningkatkan kesejahteraan hewan yang diadopsi. Sejauh ini, pengujian *usability* dari sistem adopsi hewan pada Eidos masih belum dilakukan dan ditemukannya masalah bahwa adanya kebingungan dengan alur proses dalam sistem adopsi hewan ini. Pengujian *usability* ini menggunakan metode *Heuristic Evaluation* dan *System Usability Scale* (SUS), yang melibatkan *in-depth interview* untuk memperoleh hasil yang bukan hanya berupa penilaian statistik saja, melainkan juga wawasan yang lebih mendalam dari sudut pandang pengguna. Hasil evaluasi menggunakan *Heuristic Evaluation* mendapatkan 59 permasalahan, dengan rata-rata perhitungan *severity rating* sebesar tiga atau *major*, yang perbaikannya telah menghasilkan beberapa rancangan desain rekomendasi. Adapun desain rekomendasi tersebut telah melalui pengujian akhir menggunakan *System Usability Scale* (SUS) yang berhasil meraih skor sebesar 78, atau terkategori *good*, disertai beberapa umpan balik kritis yang bersifat *minor* untuk peningkatan sistem. Dengan demikian, pengguna secara keseluruhan merasa sangat puas dalam menggunakan sistem adopsi *online* dari hasil desain rekomendasi yang ada. Implikasi desain rekomendasi yang dihasilkan telah teruji kegunaannya oleh sebanyak tiga ahli *UI/UX design* dan pengguna secara langsung sehingga dapat digunakan sebagai landasan bagi pengembangan sistem adopsi hewan secara *online* yang lebih baik.

**Kata kunci:** heuristik; kebergunaan; prototipe; sistem adopsi hewan; system usability scale

## INTRODUCTION

Indonesia is one of the most populous countries in the world, and the population of abandoned animals is on the rise. This increase has also triggered the rise of animal abuse cases committed by some irresponsible parties. In the Databoks article, there is a report from the Social Media Animal Cruel-ty Coalition (SMACC) in 2021, which shows that there are 1,626 or 29.67% of the 5,480 animal torture video content originating from the country of Indonesia spread across social media [1]. This large number has become a global issue of concern because it makes animal welfare conditions increasingly worrying. The causes of animal overpopulation, cage capacity, and limited human resources in shelters also weaken animal welfare [2]. However, adopting a pet can increase people's awareness of the need to care for animals and reduce the bad behavior of previous pet owners, especially those who torture and eat pet meat [3].

Through campaign activities, Animal Defender Indonesia has successfully delivered the "Adopt Don't Shop" message with the aim of raising public awareness about the importance of welfare for abandoned animals through their website [4]. The media is a bridge for the public to know and get all forms of information [5]. This also appears in one of the innovations, a website platform called Eidos, which helps animals and animal lovers solve all problems by providing solutions in just one form through adoption, donation, discussion, marketplace, near me, and blog features, where the focus is on animal adoption features, which aim to bring together prospective adopters and animal overseers. Following an initial analysis through interviews with animal lovers, the first prototype of

the website was found to be confusing for users due to issues with messages, navigation, unresponsive icons, and the process of adopting an animal. In addition, Eidos is still in the development stage, and the prototype of the Eidos website has never been evaluated for usability. It is important to have a good user experience in the animal adoption system because this can increase user interest in animal adoption and make users more likely to use the platform [6]. The website's success in terms of survival also depends very much on the role of usability when using the website [7].

Usability is defined by ISO (the International Organization for Standardization) 9241-11:2018 as "Extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" [8]. In this study, the evaluation method used was a Heuristic Evaluation by experts, and the System Usability Scale (SUS) was tested on users directly. The choice of method is based on several previous studies related to usability. Previous research from [9] evaluated the research and community service information system website of Lancang Kuning University, using the Heuristic Evaluation and System Usability Scale (SUS) test methods, which obtained final test results of 68 on a category C scale accompanied by 7 aspects of Heuristic Evaluation recommendation.

In previous study [10] conducted a usability testing analysis on the academic information application of Diponegoro University students using the Single Ease Question (SEQ) method as a tool to assess satisfaction and tested through the System Usability Scale (SUS), which obtained an overall test final result of 80.90%.

In previous study [11] also analyzed the application of PRICILIA in logistics, using the Heuristic Evaluation and System Usability Scale (SUS) methods, which obtained final test results of 55.13 on a category D scale accompanied by 30 improvement recommendations.

In previous, [12] evaluated an online garbage pickup application using the System Usability Scale (SUS) method, and test results 74 were obtained in grade B.

Research [13] analyzed the SIATMA website using the Heuristic Evaluation and System Usability Scale (SUS) methods, which obtained the final test results 54.4, accompanied by 25 repair recommendation solutions.

Several previous studies have been described, but no research has conducted a usability analysis on online animal adoption systems, which pays more attention to other than user satisfaction but at the same time considers the flow of the system process into the animal welfare adopted because there are many aspects involved in deciding to adopt a pet online, namely the emotional aspect, peacefulness, and security. In addition, previous studies have tended to score only System Usability Scale (SUS) test results without providing a deep insight into users' problems, and they have not offered recommendations for improvements in the form of prototypes.

Therefore, by applying Heuristic Evaluation, it can identify the usability problems of the Eidos website prototype in detail and provide recommendations for design improvements later [14] and the usability value generated from the System Usability Scale (SUS) testing can provide reliable user feedback and insights [15].

## METHOD

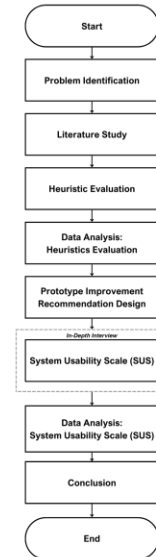


Image 1. Research Flow

The research began by identifying problems with the Eidos animal adoption system, conducting a literature study, and evaluation using the Heuristic Evaluation method. The results of the evaluation are used to design improvements to the interface that will be tested using the System Usability Scale (SUS) and in-depth interviews to get user feedback regarding the development of an online animal adoption system.

### Heuristic Evaluation

In the Heuristics Evaluation method from Jakob Nielsen, a website prototype with 10 usability principles was carried out by three evaluators. The three evaluators have had experience in User Interface (UI) and User Experience (UX) for over two years and are graduates of Strata-1. This is because, according to [14] stated, "We recommend that heuristic evaluation is done with between three and five evaluators...". The evaluation assessment is carried out based on the principles seen in Table 1 [16].

Table 1. Principles of Heuristic Evaluation

No	Statement
H1	Visibility of system status.
H2	Match between the system and the real world.
H3	User control and freedom.
H4	Consistency and standards.
H5	Error prevention.
H6	Recognition rather than recall.
H7	Flexibility and efficiency of use.
H8	Aesthetic and minimalist design.
H9	Help users recognize, diagnose, and recover from errors.
H10	Help and documentation.

Then, a severity rating classification was given with a rating scale of 0 (i don't agree that is a usability problem at all), 1 (cosmetic problem), 2 (minor usability problem), 3 (major usability problem), dan 4 (usability catastrophe) to assess the severity of the usability problem of the adoption feature in the Eidos website prototype [17].

**System Usability Scale (SUS)**

Questionnaires were distributed in the System Usability Scale (SUS) test method after respondents tried the new design recommendations using Useberry tools. There is no specific number for conducting a usability evaluation to determine the required respondents, but the rule of  $16 \pm 4$  (the number of respondents between  $16 - 4$  to  $16 + 4$ ) proved valid in finding more than 90% of usability problems [18]. Therefore, the 44 respondents in this study have achieved this rule in fulfilling the usability evaluation of the Eidos website prototype.

Data in this method was obtained based on the criteria of respondents in the JABODETABEK area who are animal lovers aged 18-35 years. The testing instrument refers to 10 questions that have

been determined as testing tools using the Likert Scale as an assessment tool [19].

The rules for calculating the score for each respondent refer to the following formula.

$$Grade = (\sum(x - 1) + \sum(5 - y))2,5 \quad (1)$$

Information:

x = Score of odd numbered questions.

y = Score of even numbered questions.

$\Sigma$  = Total score.

The data will be interpreted and analyzed based on the SUS score percentile rank assessment requirements, as shown in Image 2 [20]. The test score results will be followed by an analysis of the results of an in-depth interview with open-ended questions based on feedback from all respondents regarding the use of the Eidos website prototype with the new look.

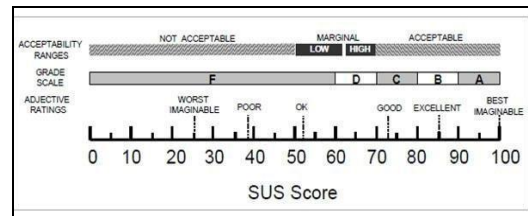


Image 2. SUS Score Percentile Rank

**RESULT AND DISCUSSION**

**Heuristic Evaluation**

The evaluation conducted by three UI/UX designers with more than two years of experience revealed 70 issues. These issues pertain to various sub-aspect, including the main page, adoption, adoption details, adoption form, adoption status, chat, and statement later. However, to avoid redundancy, it was necessary to combine sentences that had the same meaning from the issues found by the evaluators, resulting in a summary of 59 issue.

Table 2. Heuristic Evaluation Result

Code Prin- ciple HE	Average Severity	Severity				Total Frequency Principle HE
		Cosmetic	Minor	Major	Catastrophe	
H1	3,571	1	5	4	0	10
H2	1,000	0	0	1	1	2
H3	2,142	0	0	5	1	6
H4	3,857	0	3	6	0	9
H5	1,428	1	0	2	0	3
H6	0,714	1	2	0	0	3
H7	3,142	0	7	2	0	9
H8	2,285	2	2	1	0	5
H9	1,714	0	0	4	0	4
H10	2,857	1	5	1	1	8
Total	3,244	6	24	26	3	59

Table 2 reveals the average severity rating of 10 aspects of the heuristic evaluation method by Jakob Nielsen of 3,244 is rounded to 3, meaning that improvements with high priority are important. It can also be concluded that the heuristic principles that are not repaired are H2, H5, and H6 because they are at a severity level of 1 or cosmetic, meaning that existing problems do not need to be repaired except when there is still time to work. In contrast, the principles that require improvement are H1, H3, H4, H7, H8, H9, and H10.

After completing the Heuristic Evaluation process, the Eidos website prototype underwent several changes to enhance user experience. On the Home Page, color adjustments were made to the "Get" button to enhance visibility and functionality. At the same time, the feature explanation content was updated to create a more condensed look. The customer care button was moved to the bottom right of the page to improve accessibility. The Adoption page saw the removal of the promotion banner to focus on the adoption feature explanation. The spacing between animal names was adjusted for consistency and reduction of white space. The search field was added to make it easier for users to find animals they want to adopt. Next and previous navigation buttons are replaced with "Previous" and "Next" icons and page numbers to avoid confusion.

The Adoption Details page has changed the button's position so that users can view before and after photos and add a health status description. The size and type of buttons were adjusted for consistency. The Adoption Form page received additional example sentences to

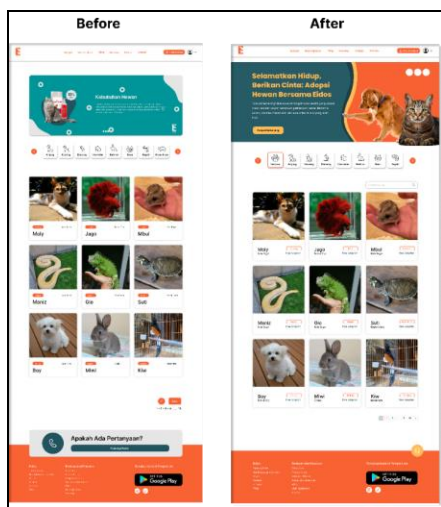


Image 3. Adoption Page

make it easier for users to fill in each field in the adoption form. The Adoption Status page underwent display adjustments to avoid user confusion, as well as the addition of a "Cancel Adoption" button to provide flexibility to users.

The Chat page has a back button to improve the user experience, while the chat interface has also changed. The Adoption Declaration page underwent improvements to the file upload information flow and the addition of an explanation of personal data security guarantees to improve clarity and security for users. Therefore, these changes aim to correct the shortcomings of the previous evaluation and improve the overall user experience on the prototype Eidos website.

**System Usability Scale (SUS)**

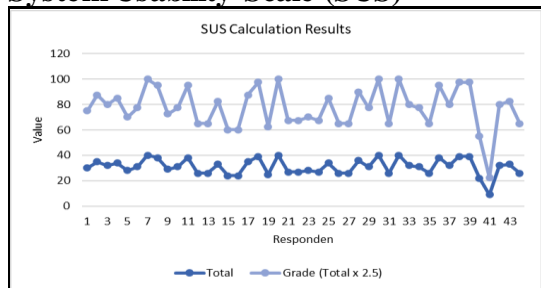


Image 4. SUS Calculation Result

The result of the recapitulation of the assessment using SUS to 44 respondents in Image 4, an average SUS score of 78, was obtained by looking at the assessment requirements on the SUS score percentile rank shown in Image 2 and the final adjective ratings obtained regarding the prototype of the adoption feature on the latest Eidos website are good and are in grade scale B. This indicates that overall, the usability of the adoption feature prototype on the Eidos website is feasible to use or can be categorized as acceptable in the SUS score percentile rank.

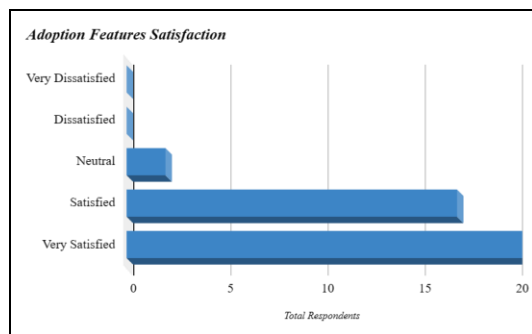


Image 5. Adoption Feature Satisfaction

The user satisfaction evaluation showed a very positive response to the Eidos animal adoption system prototype. The majority of users expressed their satisfaction, with most even being very satisfied with the experience of using the site. The predominantly positive response provided a strong motivation for the development team to continue improving and expanding the functionality of the site. This information provides valuable insights for further development and user acceptance of the site, particularly in the context of very satisfaction.

In-depth interviews with 44 respondents showed several aspects of improvement for the adoption feature on the Eidos website, including adding help text to automatically fill in the "Appointment Details" field, adjusting the layout to clarify the flow of use between the "Contact Animal Owner" and "Contents of the Statement Letter" buttons, and adding an "I Understand" button to ease navigation on the terms and conditions page. Suggestions also include clearer directions for uploading signatures and adjusting the footer size for a more minimalist look to allow users to focus more on the main information.

**CONCLUSION**

In evaluating the Eidos animal

adoption system, it was found that the Heuristic Evaluation method and display recommendation testing using the System Usability Scale (SUS) provided a positive contribution. The final SUS test score reached 78, indicating a grade B with a good qualification. This evaluation provides an in-depth understanding of system usability, especially in the context of a platform focused on animals, which can aid in the creation of a more effective online animal adoption system. The Heuristic Evaluation method has proven to yield more detailed results than conventional evaluations. Both evaluation methods provide a solid foundation for improving the interface of the animal adoption system, with the hope that the proposed improvements can be applied in the development of a broader online animal adoption platform, supporting animal welfare, and creating a better overall user experience.

Future research is expected to conduct direct testing through a website that has been fully developed and operates perfectly, to get more accurate and relevant results to the actual user experience.

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