

## **REDESIGN GOLEK BIS APPLICATION USING UCD (USER CENTERED DESIGN) APPROACH**

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**Abstract:** In the current digital era, transportation booking applications have become an integral part of people's daily lives. One of the preferred applications is the Suroboyo Bus Booking Application (GOBIS). GOBIS is a platform dedicated specifically to accessing Suroboyo Bus transportation services. However, with the advancement of technology and changing user needs, the GOBIS application also needs to be adjusted to remain relevant and meet expectations. Many users have complained about the application's ambiguous interface, unclear colors, and other issues. Therefore, a redesign of this application is necessary. This study employs the User-Centered Design (UCD) method and SUS testing to obtain a new design that can be implemented. The results show a significant improvement in application usability, with the average SUS score from users after the redesign process reaching 82.25, rated as "good" with a "B" grade. Comparing it to the usability score of the previous version, which only reached 57.25 with a "poor" rating and a "D" grade, indicates a substantial improvement. Thus, the new design demonstrates a significant improvement in usability compared to the previous version.

**Keywords:** redesign; GOBIS application; user interface; UCD; system usability scale

**Abstrak:** Dalam era digital saat ini, aplikasi pemesanan transportasi telah menjadi bagian tak terpisahkan dari kehidupan sehari-hari masyarakat. Salah satu pilihan utama yang sering digunakan adalah Aplikasi Golek Bis (GOBIS) Suroboyo Bus. GOBIS dirancang khusus sebagai platform untuk mengakses moda transportasi Suroboyo Bus. Namun, sejalan dengan kemajuan teknologi dan evolusi kebutuhan pengguna, perlu penyesuaian agar aplikasi Golek Bis tetap relevan dan memuaskan pengguna. Banyak pengguna mengeluhkan tentang antarmuka aplikasi yang kurang jelas, warna yang ambigu, dan masalah lainnya. Oleh karena itu, perlu dilakukan redesain aplikasi ini. Penelitian ini menerapkan metode UCD dan mengujikan SUS untuk mendapatkan desain baru yang lebih baik. Hasilnya menunjukkan peningkatan yang signifikan dalam kegunaan aplikasi, dengan nilai rata-rata skor SUS pengguna setelah proses redesain mencapai 82.25, dinilai sebagai "good" dengan peringkat "B". Perbandingannya dengan nilai kegunaan versi sebelumnya yang hanya mencapai 57.25 dengan penilaian "poor" dan peringkat "D" menunjukkan peningkatan yang signifikan. Oleh karena itu, desain baru menunjukkan perbaikan yang berarti dalam hal kegunaan dibandingkan dengan versi sebelumnya.

**Kata kunci:** redesign; aplikasi GOBIS; user interface; UCD; system usability scale

## **INTRODUCTION**

In modern application development, visual consistency and intricate layout

structure are important aspects that must be considered. A well-designed app offers not only functionality, but also a satisfactory user experience (UX) [1].

Without consistency and an intuitive layout, users can feel confused and frustrated, which can ultimately reduce user satisfaction and loyalty.

The main problems faced by the Golek Bus application are visual inconsistencies and excessive layout complexity. These inconsistencies include variations in the use of non-uniform colors, fonts, and icons across interfaces. The complex layout structure makes navigation difficult, so users often have trouble finding the information they need.

A specific example of this problem is a route search page that has a different visual style than the main page, as well as buttons that are not placed logically. The impact of this issue on the user experience is significant; Users become dissatisfied, often leave the app before completing their goals, and are less likely to recommend the app to others.

To overcome this problem, the User-Centered Design (UCD) approach is proposed as the most effective solution. UCD is a design method that focuses on the needs, wants, and limitations of the end user at each stage of the design process. This approach is suitable because it ensures that the redesign of the Golek Bus application will meet user expectations and increase their satisfaction.

The main stages of the UCD process that will be applied in the redesign of the Golek Bus application include user research, conceptual design, user testing, and implementation and evaluation [2]. User research involves gathering in-depth information through surveys, interviews, and observations to understand their needs and difficulties. Conceptual design includes the development of wireframes and initial

prototypes based on findings from user research, including the creation of usage scenarios that reflect real situations faced by users [3]. User testing is done with trials by real users to get feedback on the initial design and create iterations based on that feedback. Implementation and evaluation is the stage where an enhanced design is implemented and evaluated continuously with user data analysis to ensure the application functions as expected and continues to meet user needs. By implementing these UCD stages, the Golek Bus application will experience significant improvements in terms of visual consistency and simplicity of layout, which will ultimately improve the overall user experience and satisfaction.

Furthermore, the previous research was used as literature material for the first review of research conducted by yehdeya et al Developing UI / UX in VR. Virtual Reality Gamelan, where users interact with a gamelan bat to play gamelan music. UCD is used to prioritize user experience. Hopefully, this application provides a gamelan gaming experience that is similar to real life [4]

Second, research conducted by Hariyani et al UNHAR, a university in North Sumatra, Indonesia, requires an information system to improve education services. The thesis process is often hampered by difficulties meeting supervisors. Therefore, a thesis guidance application and work practices with the UCD method were developed to facilitate students and lecturers [5].

The third research conducted by Sarah et al Torche Education, an edutech startup in Indonesia, wants to develop an LMS to overcome time constraints between tutors and students. This research designed Torche's UI/UX LMS with a user-centric design method.

Involving 10 people in the initial planning and 96 people in testing, the study showed a level of ease of learning of 94.70%, efficiency of 0.654 goals/second, and user satisfaction of 74.79 on the acceptance scale, with a rating of good [6]

The four studies conducted by yanutiar et al This study aims to improve BAPENDA services in Pemalang Regency through the creation of the Online Queue application. The User Centered Design (UCD) method is used to design the appearance of the application according to user preferences. The evaluation is carried out with User Acceptance Testing (UAT) to measure user satisfaction with the application design. The results of the research will produce a UI design design that follows the principles of UCD [7].

The five studies conducted by bastian et al In Indonesia, playing poker games has become one of the popular activities. Poker is a card game that can be played in person or over the internet. This research developed a user interface for a similar online Poker game using the UCD (User-Centered Design) method under the name FairPlay Poker game. The resulting design is a lighter 2D illustration design to improve the user experience [8].

In addition, increased competition in the online transportation industry demands innovation and improved service quality. Golek Bus app should be able to compete with other similar apps that offer advanced features and better user experience [9]. Therefore, the redesign of the Golek Bus application is an urgent need to ensure business continuity and user satisfaction [10].

This study aims to redesign the Golek Bus application using the UCD approach. Thus, it is expected that the

results of the redesign will improve application performance, improve user experience, and increase application competitiveness in an increasingly competitive market.

**METHOD**

The research process begins as illustrated in the flow chart below, starting from the stages of problem identification, goal setting, problem limitation, research methodology, literature study, evaluation of old designs, implementation of UCD methods, user assignment, determination of user needs, design of new designs, evaluation of new designs, calculation of usage results using system usability scales, and drawing conclusions [11]. Data collection was carried out through questionnaires distributed through Google Form, involving Golek Bus (GOBIS) application users as participants [12]. All steps are arranged systematically with the aim of supporting research in evaluating usability with the UCD approach [13]. In this research flow chart, the stages of UCD implementation are carried out at the stage of user determination, determination of user needs, and designing new designs based on input from users.

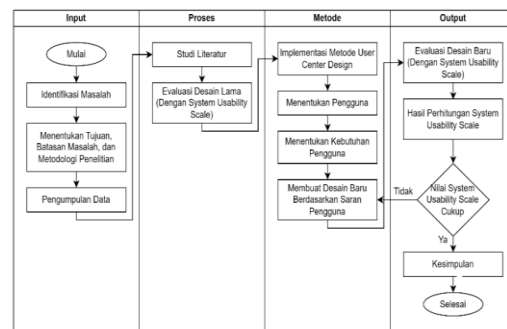


Image 1. Research Flow

**Identify the Problem**

In this phase, an introduction and observation of problems that arise in the GOBIS application is carried out. Based on the results of these introductions and observations, it was concluded that some design adjustments are still needed to increase the effectiveness of using the application.

**Data Collection**

In this step, a questionnaire is used with the System Usability Scale method to evaluate the GOBIS application. Table 1 lists the questionnaire questions used in the System Usability Scale method [14]. The System Usability Scale calculation instrument consists of 5 categories with different points for each scale, namely 1 point for "strongly disagree", 2 points for "disagree", 3 points for "neutral", 4 points for "agree", and 5 points for "strongly agree" [15].

Table 1. SUS Question

No	Pertanyaan
1	I'm thinking of using this system again?
2	I feel that this system is complicated to use?
3	I feel that this system is easy to use?
4	Do I need help from someone else or a technician in using this system?
5	I think these system features are working properly?
6	I feel that there are a lot of things that are inconsistent (mismatched on this system)?
7	I feel that others will understand how to use this system quickly?
8	I find this system confusing?
9	I feel that there is no obstacle in using this system?
10	I need to familiarize myself first before using this system?

**Implementation of the UCD method**

In this step, the goal is to identify the user of the GOBIS application and use this information as data on the user's needs. The identification results show that the main users of this application are the general public. Furthermore, at the Design Solutions stage, a process of redesigning the appearance of the GOBIS application was carried out based on input obtained from respondents through questionnaires. The design process is carried out in the figma application, by comparing the initial design and the new design of the application.

The final stage, Evaluate Against Requirements, aims to evaluate whether the app's new design meets user needs. This evaluation is done directly to users to collect feedback, and uses System Usability Scale as an assessment tool to measure the usability of the new design of the GOBIS application. This stage is important to ensure that the new application design has met the standards and needs of users effectively.

**RESULT AND DISCUSSION**

**Legacy Design Testing with SUS**

Before starting the redesign stage, this study tested the existing design first. The results of these tests will be an important point of comparison to see to what extent new design changes can improve the overall quality of the application. By comparing the results of the new design test with the existing design, it is hoped that this research can make a meaningful contribution in improving the functionality and usability of the GOBIS application. This research will redesign the login register page and dashboard. Image 1 represents the login page and initial design register and Image

2 is the initial design of the application dashboard.

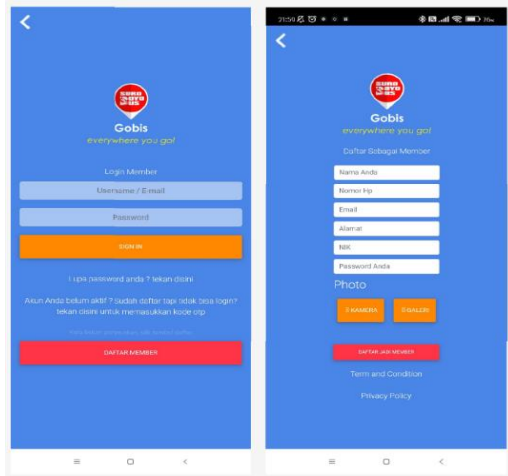


Image 2. Initial design of logins and registers



Image 3. Initial design of the dashboard

Furthermore, to evaluate the usability score of the old design, usability testing was carried out involving the participation of GOBIS application users with a total of 20 respondents. The

results of the old design SUS score are in table 2.

**Application of the SUS method**

The application of the User Centered Design method aims to identify the needs of GOBIS application users. The resulting improvement proposals will be the basis for the creation of new design prototypes. Some of the feedback received includes, the use of striking colors or unbalanced contrast that interferes with the overall aesthetics and reduces the unity of the user experience. The complicated layout structure creates confusion for users, especially if the different functions are not clearly separated. Inadequate responsiveness in displaying route, stop, and bus position information can disrupt the user experience and reduce the overall usability of the application. Unclear navigation, especially the lack of route order to be taken from stop to stop, can cause confusion or uncertainty for users. The solution to this problem could involve adding a feature that displays the route sequence in a clear and structured manner, perhaps in the form of a list of routes arranged sequentially.

Table 2. Old design SUS score

Responden	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total	Score SUS
R1	2	2	2	2	3	1	3	1	2	2	20	50
R2	2	3	1	3	2	1	2	2	2	3	21	52,5
R3	1	2	2	3	1	2	1	3	3	2	20	50
R4	2	3	3	1	2	3	2	1	2	3	22	55
R5	3	3	2	1	2	3	2	2	1	2	21	52,5
...	...	...	...	...	...	...	...	...	...	...	...	...
R19	3	3	3	2	2	1	2	3	2	3	24	60
R20	1	2	2	3	1	2	1	3	3	2	20	50
												57,25

**New Design Creation and Testing**

After testing the old design, a new design was made which is contained in Image 4.

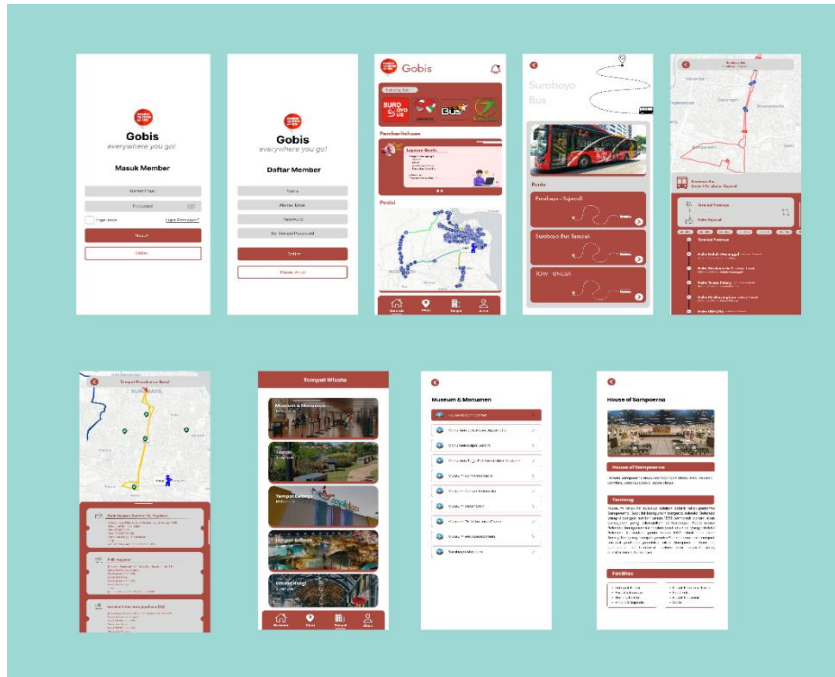


Image 4. New design of the app

In Image 4 is the result of the process of redesigning the application, the researcher continues with the trial phase again. The purpose of this stage is to test whether the System Usability Scale (SUS) score of the redesigned application has increased compared to the previous score. If a higher SUS score indicates a better usability level.

By conducting trials, researchers can assess whether changes made to the application design have had a positive impact on the user experience. If the SUS score increases, it indicates that the changes made have successfully improved the usability of the application. However, if the SUS score remains or even decreases, it may indicate that the changes made have not been optimal or may even worsen the user experience.

For this reason, in table 3, the new design score for respondents is still the same, namely GOBIS application users.

After conducting usability testing as listed in table 3, it was found that the System Usability Scale (SUS) evaluation results of the application's new design showed significant improvements. The average SUS score obtained from app users after the redesign process was 82.25. This rating is categorized as "good" with a rating of "B". A comparison with the usability score of the previous version of the app, which earned an average SUS score of 57.25 with a "poor" rating and a "D" rating, shows a substantial improvement in usability. Thus, it can be concluded that the new design has experienced a significant increase in terms of usability when compared to the previous design.

Table 3. SUS Score New Design

Responden	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total	Score SUS
R1	3	4	3	3	4	3	3	3	4	3	33	82,5
R2	4	3	3	4	3	3	3	4	3	4	34	85
R3	3	4	3	3	3	3	3	4	4	3	33	82,5
R4	4	3	3	3	2	3	4	3	3	3	31	77,5
R5	4	3	3	3	4	3	3	2	3	4	32	80
...	...	...	...	...	...	...	...	...	...	...	...	...
R19	4	4	2	4	3	4	3	4	3	3	34	85
R20	3	3	4	3	4	2	4	4	3	3	33	82,5
												82,25

**CONCLUSION**

After carrying out the stages from beginning to end, the conclusion of this study aims to improve the Golek Bus application using a User Centered Design (UCD) approach. In UCD, the main focus is the needs and user experience, so changes made to the application aim to improve quality and usability based on direct user feedback. With the average SUS score from users after the redesign process reaching 82.25, which was rated as "good" with a rating of "B", there was a significant improvement in application usability. This compares with the usability score of the previous version, which only reached 57.25 with a "poor" rating and a "D" rating, showing a substantial improvement. Thus, the new design shows a significant increase in usability compared to the previous design.

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