

# Cinema e-Ticket Application Design and Usability Evaluation Using SUS

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## Abstract

*The internet has become an essential need in the digital era, facilitating various activities, including e-commerce, supported by advances in Information and Communication Technology (ICT). One form of its implementation is an online cinema ticket booking application, which offers convenience in choosing showtimes, seats, and payments. This study aims to analyze user needs in online cinema ticket booking and design an interface mobile application design that is evaluated using the System Usability Scale (SUS) method. The approach used is User-Centered Design (UCD), which focuses on user experience. The results of the study showed that the evaluation of usability testing with SUS from 30 respondents produced an average score of 81.583 (grade A), which indicates a very good level of application usability. This study recommends the application of the SUS method and the development of a UCD-based design to improve the user experience of the cinema e-ticket application, with the potential for further optimization through variations in evaluation methods and increasing the number of respondents.*

**Keywords**—Cinema, Usability Testing, System Usability Scale, e-Ticket, User Interface

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## 1. INTRODUCTION

The internet has become an important need for people in this era because it has facilitated various online activities, including trade, known as *e-commerce* [1], [2]. The growth of the e-commerce market continues to show a steady increase, but it is not in line with the surge in consumer interest in shopping online [3].

The development of e-commerce is also inseparable from the progress of Information and Communication Technology (ICT), which is the backbone of e-commerce and plays an important role in supporting the growth and development of business in the digital era [4], [5]. Technology has become a basic need for the exchange of information both globally and locally [6]. This technology also allows the integration of various digital services that facilitate transactions and communication between users and service providers. Especially for developing countries such as Indonesia, the use of ICT provides great opportunities by providing a strong means to implement a multilateral transaction system [7]. This is to accommodate consumer demand for online shopping. Thus, the e-commerce platform functions as a bridge that connects various users and connects users with businesses [8]. One of the e-commerce technology media used is in the form of a mobile application. Effective interface design can significantly increase visual appeal,

generate excitement, and positively influence consumer perceptions [9]. This allows users to return to the platform or recommend it to others.

The application of effective interface design principles and personalization is also very relevant in the context of e-commerce for online cinema ticket booking via mobile phone applications. With the increasing preference of people to enjoy entertainment practically, cinema ticket booking applications must be able to provide a smooth and attractive user experience. Ease of booking cinema tickets is an important aspect for consumers in using online ticket booking applications, this not only simplifies the booking process but must also meet the self-efficacy aspect to increase the intention to use it. [10]. In the PeduliLindungi usability testing research, the results showed that there was an influence of the user interface display on the usability of the application [11]. In this e-ticket booking application, consumers are given the freedom to choose seats, see show schedules, and make payments quickly and safely. Reported through Indonesian media, this is in line with data from Cinema XXI Indonesia, where online ticket transactions reached 40% of total ticket purchases in the second quarter of 2019 [12]. This shows a high interest in purchasing cinema tickets online.

Several previous studies have used the System Usability Scale (SUS) as a measuring tool to measure the level of usability of an online

application [13], [14], [15], [16]. Based on this background, the topic of this study is to analyze user needs in ordering cinema tickets and recommend the design of a cinema e-ticket ordering site that is evaluated using the System Usability Scale (SUS).

## 2. METHODOLOGY

The research method used to design the cinema e-ticket booking application design is to apply a model approach that is in accordance with user needs, namely User Centered Design (UCD). UCD is a user-centered interface design method that prioritizes user experience based on application developer observations. [17]. The definition and application of each of these stages are based on the concepts of the stages of the ISO 9241-210:2019 standard [18].

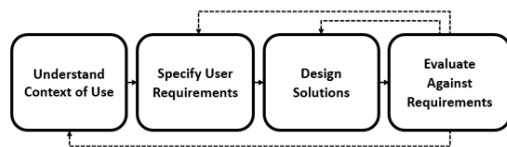


Figure 1. User Centered Design

Understand and specify the context of use is to identify and analyze potential system users, current and future users, usage objectives, and usage situations. This process can be done through observation and surveys to understand the usage context.

Specify the user requirements is to identify or formulate a series of specific requirements and user objectives that must be met to ensure user needs are met, while still considering organizational requirements.

Produce design solutions is to create solutions based on user needs that have been identified in the previous stage.

Evaluate the design against requirements is a process carried out by involving users who will interact with the application. The goal is to obtain user feedback. The evaluation is carried out by means of a quantitative survey with the calculation of the System Usability Scale formula.

## 3. RESULT

To obtain system flow and user needs information, a survey was conducted through a digital questionnaire containing several questions listed in Table 1. The results of feedback from respondents were re-selected to minimize several answers that were multi-

interpretable or ambiguous, the total number of questionnaires obtained was 27 respondents.

No.	Questions
1	User demographic identity (age & gender)
2	Have you ever used an online cinema ticket booking application?
3	How do you make decisions about choosing films?
4	What aspects do you pay most attention to when choosing a film to watch?
5	Do you tend to watch movies alone or with other people?
6	What is your relationship with that person?
7	What genre of films do you often watch?
8	When do you usually watch movies? (Weekdays/Weekend)
9	Do you often buy food or drinks when watching at the cinema?
10	Explain your reasons for purchasing the food/drink.
11	What problems do you face in ordering cinema tickets on mobile devices?
12	What payment methods do you use frequently?

Table 1 : Survey questions

The following is a summary of the results of the questionnaire that have been answered by 27 respondents, namely: 1) most respondents are in the age range of 18-25 years, 6 respondents have never used an online cinema ticket booking application, 2) the majority of respondents choose aspects of genre, synopsis, and actors as considerations for watching films, 3) 57.1% of respondents watch films on weekends, 42.9% on weekdays, 4) 50% of all respondents watch films during the day, 5) 42.9% of respondents do not buy food/drinks while watching films, 33.3% sometimes buy, and 23.8% always buy, respondents who sometimes buy food/drinks mention that the obstacle is a limited budget, so they often rely on available promotions, 6) the majority of respondents complain about the poor user interface in the online ticket booking application, 7) 57.1% of respondents make payments using the mobile banking method.

Some of the main problems faced by respondents are 1) incomplete information about the film such as no actor information or film reviews, 2) unable to order films for screening on different days within a week, 3) unable to order

films that will be showing soon, 4) less varied payment method options, 5) unpredictable user interface elements. The depiction of the system flow is depicted using the Unified Modeling Language (UML) in the form of a use case diagram in Figure 2.

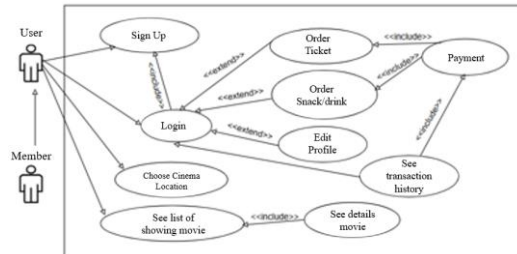


Figure 2. Use Case Diagram for ordering cinema e-tickets

Based on these results, user needs are summarized into a persona (Ryan) to represent the needs of an e-ticket ordering application for cinemas. Ryan is a 2nd semester student at a university in Jakarta. Ryan has a habit of watching movies with friends/family in the action-comedy genre. Ryan usually chooses movies based on genre, actors, and interesting trailers. Ryan has a high spontaneity, so he often orders movie tickets suddenly. When with his friends, Ryan usually watches movies during the day, when he has free time. Ryan is not used to using m-banking applications to make transactions. Ryan also does not buy food/drinks when watching movies because he usually eats and drinks before the movie starts.

#### Goals

- Comparing movies to watch based on genre and actors.
- Ordering tickets for movies that will be showing soon.

#### Needs

- A cinema ticket ordering application that has complete information, starting from synopsis, reviews, and actors involved.
- A cinema ticket ordering application that has various payment methods.

#### Pain points

- There are several UI elements that are not very clear in their interactions, for example: the button to read a more complete synopsis is missed, or the movie poster image that should be able to be enlarged, but it turns out not to be.
- Ryan's payment method options are not available on his smartphone, so Ryan needs help from his friend to make the payment.
- Ryan cannot order tickets for a movie that is about to be released, so Ryan has to order tickets for the next screening.
- Lack of direction for scanning the QR code of the digital ticket, such as the location to scan the QR code and the process flow.

Storyboard is used to visualize the flow of user interaction with the application clearly in Figure 3.

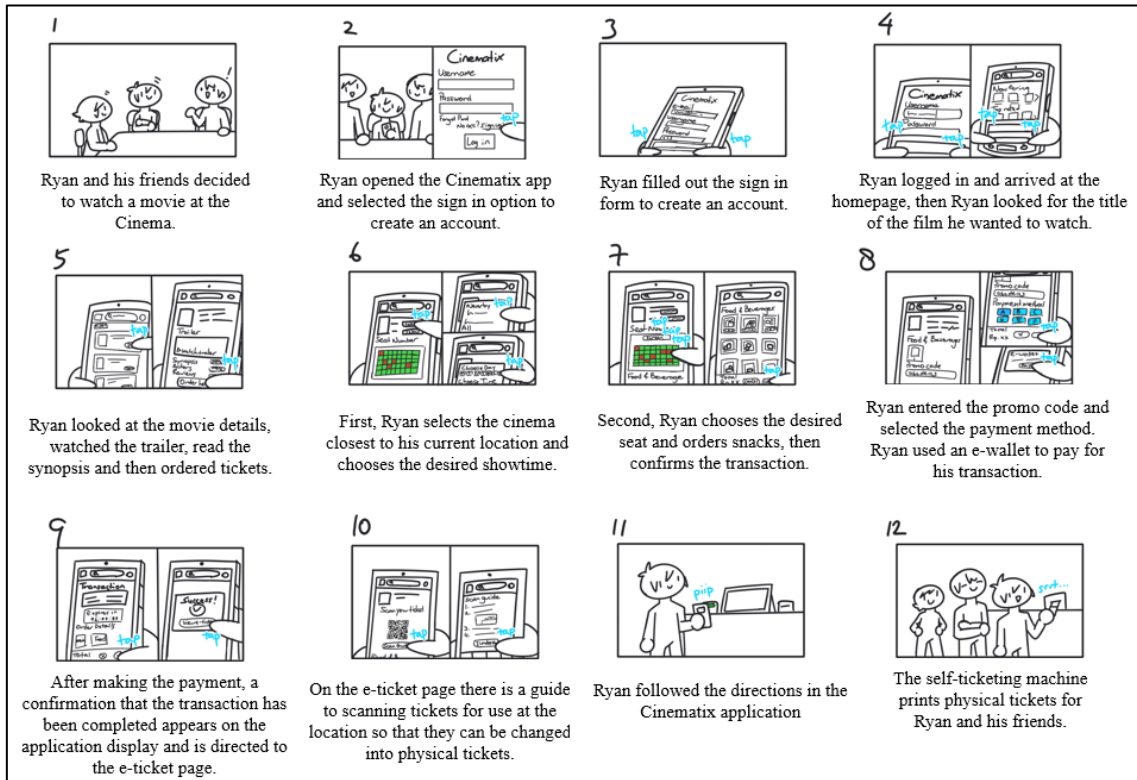


Figure 3. Cinema e-ticket ordering storyboard

Low-fidelity prototype is used after the storyboard is created, it aims to provide a quick depiction of ideas, flow, and functionality. This prototype usually has minimal details and focuses more on the structure and flow of user interactions so that it is more time and cost efficient. Figure 4 is a prototype of the prospective member registration page and member login.



Figure 4. Sign up & login

Figure 5 is a prototype of the prospective homepage and shows the location of the nearest cinema to the user's location. Users can also access Google maps to see other available

locations.

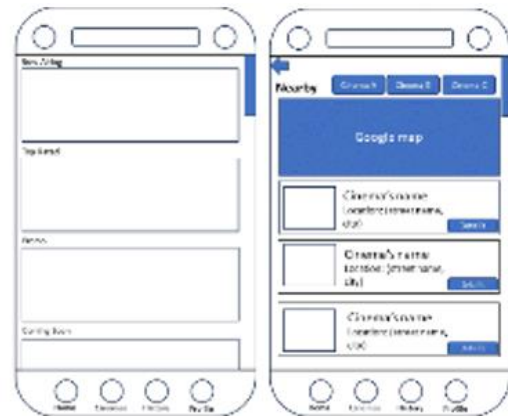


Figure 5. Home & cinema locations

Figure 6 is a prototype of a cinema information page that shows photos, cinema locations and weekly showtimes.

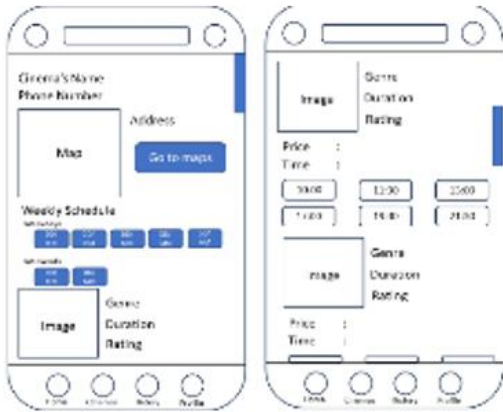


Figure 6. Cinemas & showing films

Figure 7 is a prototype of the movie search page where users can also use the filtering options provided to facilitate searching.



Figure 7. Movie search & filtering

Figure 8 is a prototype of a ticket booking page that is divided into two parts, namely cinema details in the weekly showtimes section or on the movie details page. Users who access from the cinema details page do not need to enter the location and time, but users who access from the movie details page must enter the location and time.



Figure 8. Cinema e-ticket ordering

Figure 9 is a prototype of the order summary page to confirm the payment to be made by the

user and the transaction history page that has been made by the user.

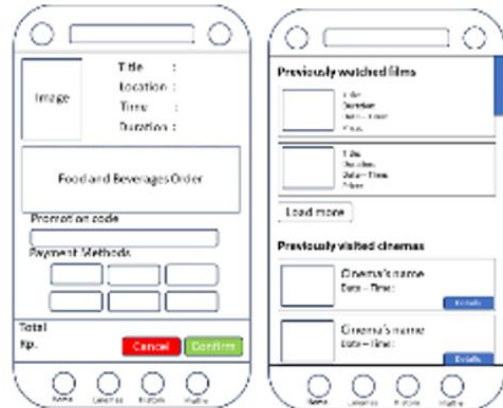


Figure 9. Confirmation & transaction history

Based on the designed prototype, the task flow is then used to describe the sequence of activities carried out by the user in achieving the goals in the cinema e-ticket ordering application shown in Figure 10.

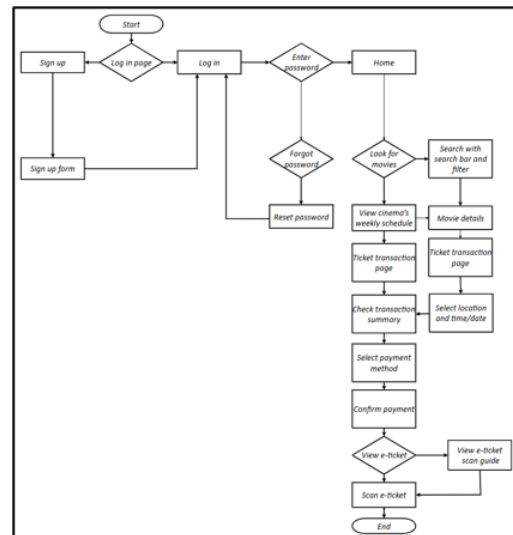


Figure 10. Cinema e-ticket booking task flow

High-fidelity prototypes are used as an advanced design stage to describe applications that function in real terms and resemble the final product. This prototype creation utilizes the Figma application, which is a cloud based application.



Figure 11. Sign up & login

Figure 11 is a prototype of the prospective member registration page and member login.

Figure 12 is a prototype of a cinema information page that shows photos, cinema locations and weekly showtimes.

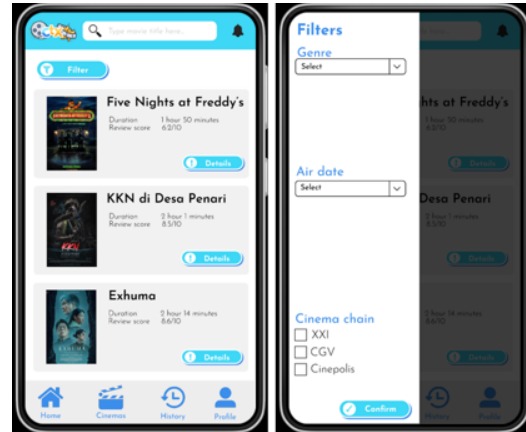


Figure 13. Movie search & filtering

Figure 13 is a prototype of the movie search page where users can also use the filtering options provided to facilitate searching.



Figure 11. Home & cinema locations

Figure 11 is a prototype of the candidate homepage and shows the location of the cinema closest to the user's location.

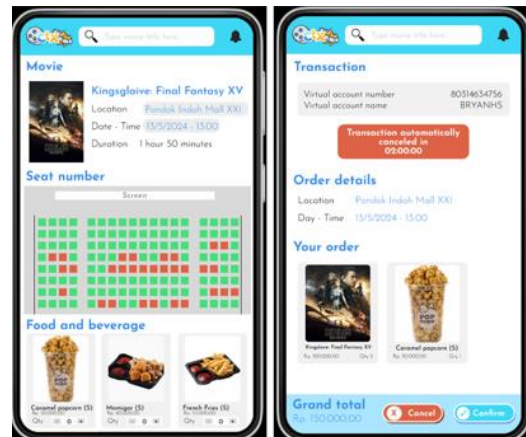


Figure 14. Cinema e-ticket ordering

Figure 14 is a prototype of a ticket ordering page which is divided into two parts, namely cinema details in the weekly showtimes section or on the film details page.

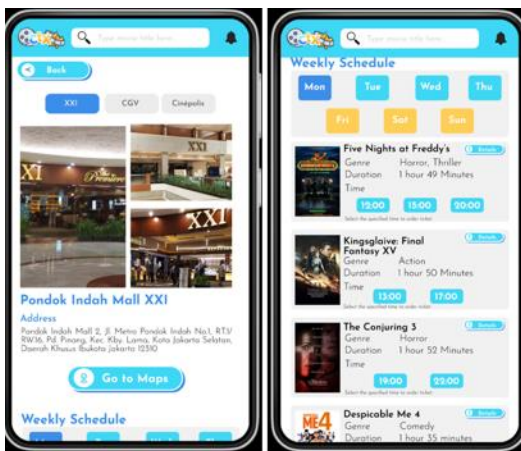


Figure 12. Cinemas & showing films

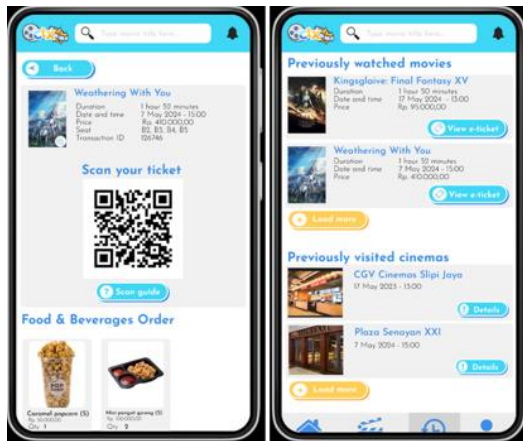


Figure 15. Confirmation & transaction history

Figure 15 is a prototype of the order summary page to confirm the payment to be made by the user and the transaction history page that has been made by the user.

Next, an evaluation of the application design was carried out to obtain user feedback. At this stage, 30 anonymous respondents with a target age of 15 to 25 years old conducted a trial of the application design through Figma. After that, the respondents then filled out a digital questionnaire consisting of 10 statements using a Likert scale with a value range of 1 (strongly disagree) to 5 (strongly agree). The statements used in the digital questionnaire used the SUS method as shown in table 2.

No	Question	Scale
1	I think that I would like to use this system frequently.	1-5
2	I found the system unnecessarily complex.	1-5
3	I thought the system was easy to use.	1-5
4	I think that I would need the support of a technical person to be able to use this system.	1-5
5	I found the various functions in this system were well integrated.	1-5
6	I thought there was too much inconsistency in this system.	1-5
7	I would imagine that most people would learn to use this system very quickly.	1-5
8	I found the system very cumbersome to use.	1-5
9	I felt very confident using the system.	1-5

10	I needed to learn a lot of things before I could get going with this system.	1-5
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Table 2 : SUS questionnaire

Table 3 is a calculation of the questionnaire that has been filled out by 30 related respondents.

	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	Ttl	SUS
1	5	2	5	1	5	1	5	1	5	2	32	95
2	5	2	4	1	4	2	5	1	4	4	32	80
3	4	2	4	1	4	1	4	2	5	4	31	77.5
4	4	2	4	2	4	2	4	2	4	5	33	67.5
5	5	1	5	1	5	1	4	1	5	2	30	95
6	4	2	4	1	4	2	4	1	5	2	29	82.5
7	5	1	5	1	2	1	5	1	4	2	27	87.5
8	5	1	5	1	5	2	5	1	5	1	31	97.5
9	4	2	4	1	2	2	4	1	2	4	26	65
10	4	2	5	2	5	2	4	4	4	4	36	70
11	4	5	4	4	5	4	5	5	4	5	45	47.5
12	4	2	4	4	5	2	4	4	4	4	37	62.5
13	5	1	4	1	5	2	5	2	4	1	30	90
14	5	4	4	1	5	2	4	1	5	2	33	82.5
15	4	1	5	2	5	2	5	1	5	2	32	90
16	4	1	5	2	2	2	4	1	4	2	27	77.5
17	5	1	5	1	2	1	4	2	5	2	28	85
18	5	1	4	1	4	1	4	1	5	2	28	90
19	5	1	4	1	2	2	4	1	4	2	26	80
20	4	1	4	1	2	2	5	1	5	1	26	85
21	4	2	4	1	5	2	4	2	4	1	29	82.5
22	4	2	4	2	5	2	4	2	5	2	32	80
23	4	1	5	1	4	4	4	1	5	4	33	77.5
24	4	1	5	1	5	1	4	1	4	1	27	92.5
25	5	2	4	2	4	1	5	2	4	2	31	82.5
26	5	1	5	2	5	2	4	2	4	2	32	85
27	4	1	5	1	5	1	4	1	4	2	28	90
28	5	1	4	1	4	1	4	1	4	2	27	87.5
29	4	1	4	1	4	1	4	1	5	1	26	90
30	5	2	4	2	5	2	4	2	4	5	35	72.5

Table 3 : SUS calculation details

#### 4. DISCUSSION

The research results are based on the calculation of SUS usability testing from data from 30 respondents, the average SUS value/score obtained was 81.583 or in the grade A range [14].

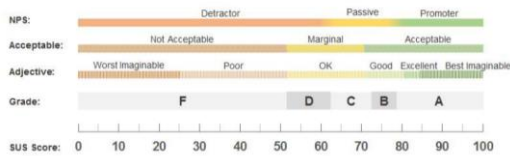


Figure 16. SUS measurement scale

The score shows that the application design that has been designed has met the needs of users well and is easy to use. The following is a visualization of the calculation results in the form of a line graph in Figure 17 and a histogram in Figure 18 which shows the distribution of SUS value data for each respondent.

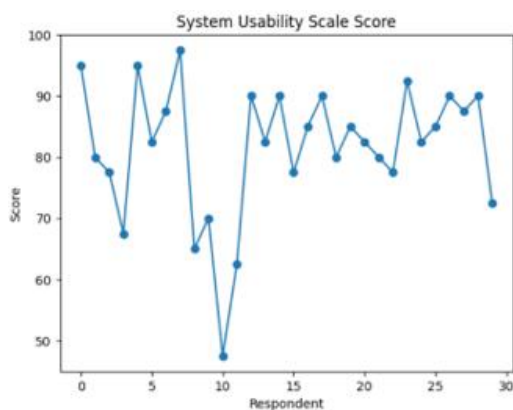


Figure 17. SUS Score Line Graph

The histogram in Figure 17 is used to determine the distribution of SUS data from each respondent.

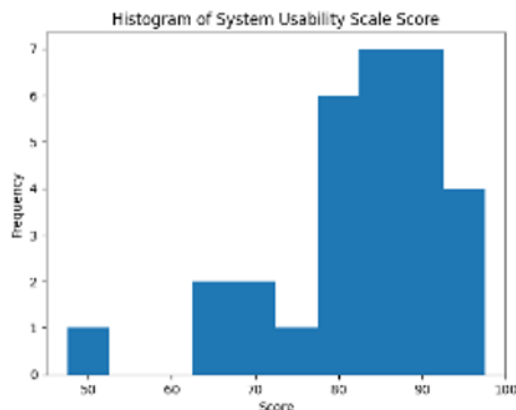


Figure 18. SUS Score Histogram

## 5. CONCLUSION

Based on the stages and results of the research that has been carried out, it can be concluded that by implementing the UCD approach through distributing digital questionnaires to respondents, forming personas,

designing low-fidelity and high-fidelity designs, and evaluating usability testing using the SUS method through digital questionnaires with a Likert scale of 1-5, it produces a measurement value/score for the design of a mobile-based cinema e-ticket booking application that is in accordance with user needs.

## 6. SUGGESTION

The use of various usability testing methods can be applied to further provide certainty of user satisfaction in using the e-ticket application. In addition, the variety and number of respondents can also be further increased to produce broader user needs or persona formation.

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