



Usability Analysis using User Experience Questionnaire (UEQ) and Concurrent Think Aloud (CTA) on Fintech Bibit Application (Case Study on Bibit Application Users in Denpasar)

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Abstract

This study aims to measure and determine the effectiveness, efficiency and user satisfaction of the Bibit fintech application. The results of measurements carried out using Concurrent Think Aloud show that the effectiveness measurement obtains an average result of 90% and the efficiency measurement obtains an average result of 91%. The results of measuring user satisfaction can be obtained from the results of the User Experience Questionnaire aspects of efficiency (1.68) aspects of attractiveness (1.39), perspicuity (1.40), stimulation (1.21) dependability (1.00) and novelty (0.48). This research shows that the Fintech Seeds application has been effective and efficient in its use, and on user satisfaction it has a positive impression, only that the novelty aspect has neutral results, thus innovation and creativity in development must increase in the future.

Keywords: Financial technology, Usability, User Experience Questionnaire (UEQ), Concurrent Think Aloud (CTA).

I. INTRODUCTION

The development of information technology towards the current digital era is an innovation that changes the system and affects human behavior and expectations in accessing various features of information and electronic services, one of the current innovations is financial technology (fintech), a financial service, where this sector is highly anticipated by the government and the public to encourage an increase in the number of users to be able to access financial service [1].

One of the fintech that is developing in Indonesia is Fintech Investment where fintech investment is a system of investing money or capital by utilizing financial technology, especially digital-based ones, such as mutual funds, stocks, deposits, gold to become investors in online peer to peer lending [2]. There are various kinds of Fintech Investment in Indonesia, including Bibit, Ajaib, Bareksa, Tanamduit and Xdana. Based on research by DailySocial and Populix in Indonesia, 32.9% of respondents use Bibit as an application in investing in mutual funds, followed by Ajaib (26.4%), Tanamduit (19.3%), Bareksa (11.4%), and Xdana (3.6%) [3].

Bibit has the most users currently on the Google Play Store with a rating (of 4.7) when compared to the ratings of Bareksa (of 4.6), Ajaib (of 4.5), Xdana (of 3.8), and Tanamduit (of 3.5). Even though Bibit has the most users and a fairly good rating, it turns out that there are still problems experienced by users, namely, based on observations that have been made by researchers, the results of observations made by researchers from reviews of the Bibit fintech application on the Google Play Store, there are many users who complain about problems or errors in the fintech application Seed. Here is an example of a complaint that users stated through a review on the Google Play Store, a user named Lufiyah 0428 complained "The application when opened suddenly exits". A user named Satra Gunanda also complained about "The application has a connection error even though the signal is strong" and a user named Hadi Wijono also complained "When logging in, they were told to register again even though they had been using the seed application for 1 month".

Therefore, it is necessary to evaluate to find out what problems exist in the Bibit fintech application, as well as take measurements to find out the level of effectiveness, efficiency and satisfaction of Bibit

fintech application users. To measure the level of user satisfaction of fintech applications, researchers use the User Experience Questionnaire (UEQ) and use the Concurrent Think Aloud (CTA) method as a usability test at the level of effectiveness and efficiency, where researchers can find out the obstacles or problems that exist in the user's mind when they perform the specified task (Subrata, 2020) [4].

There are several similar studies conducted by (Al Ghifari Hartzani, 2021) entitled Evaluation of User Experience on OVO Digital Wallets using the User Experience Questionnaire (UEQ) where this research succeeded in determining the level of user experience based on aspects of UEQ [5]. In a study entitled The Evaluation of Web Based Academic Progress Information System Using Heuristic Evaluation and User Experience Questionnaire (UEQ) (Paramitha, 2018) managed to get a score for each aspect of user experience in the Web Based Academi Progress Information System [6]. The research entitled Fintech E-Commerce Payment Application User Experience Analysis during COVID-19 Pandemic (Leon A. Abdillah, 2020) managed to get a score for each aspect of user experience in the Go-Pay application [7]. In addition, the research by (Ketut Gde Sukla Mandika, 2022) entitled User Interface Analysis on the Udayana University Participant Credit Unit System Using the Usability Testing Method where this research obtained results from a task scenario questionnaire and usability evaluation where the effectiveness was 60.96%, the satisfaction level was 58.7% which can provide recommendations for improvements on the website SiSakti [8].

II. THEORETICAL BASIS

A. Usability

According to the International Standards Organization (ISO) defines usability, namely the extent to which a product can be used by certain users to achieve set targets with effectiveness, efficiency, and satisfaction. Usability can be interpreted by a term that refers to the ease with which humans can use certain tools or certain objects made by humans to achieve certain goals [9]

B. User Experience Questionnaire (UEQ)

The User Experience Questionnaire is a framework that conveys the overall impression from the usability aspect to the user experience aspect. In addition, UEQ offers free analysis tools that are easy to understand and accurate. The subjective experience that users have with the products they use is referred to as the user experience, interactive products can be measured directly and quickly using UEQ [10]

C. Concurrent Think Aloud (CTA)

Concurrent think aloud is where the participant expresses what is in his mind during the execution of a given task scenario. Meanwhile, retrospective think aloud where the user verbalizes directly after working on the given taskscenario [11]

III. RESEARCH METHODS

In research method, the stages carried out for problem solving in usability evaluation using the User Experience Questionnaire ((UEQ) and Concurrent Think Aloud (CTA) for evaluation instruments are by survey method using the UEQ questionnaire as many as 30 respondents and task scenarios as many as 10 respondents. Teknik data collection in the form of observations, interviews, questionnaires and task scenarios. The types of data used are quantitative and qualitative. The data used in this study is primary data while the object of this study is the Bibit fintech application and the respondents obtained are from the Denpasar area.

IV. RESULTS AND DISCUSSION

A. Research Results

The results of the study describe all the data obtained during the research process using the User Experience Questionnaire (UEQ) and Concurrent Think Aloud (CTA) as follows:

1. User Experience Questionnaire Results

a. Demographic Analysis Results

The distribution of questionnaires in this study succeeded in obtaining as many as 30 respondents. Based on the answers obtained, the characteristics of the respondents will be grouped based on gender, age, last education, domicile, length of use of the Bibit fintech application, and intensity of use of the Bibit Fintech application.

b. Statistical Analysis Results

Descriptive statistical analysis in this study was carried out using the average value (mean) of each variable indicator or statement indicator in the questionnaire used.

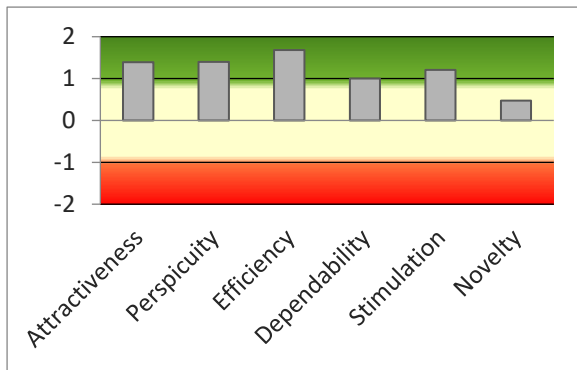
Table 1. Average rating scale on the questionnaire

Average value	Information
> 0,8	Positive evaluation
-0,8 – 0,8	Neutral evaluation
< -0,8	Negative evaluation

The results of the UEQ questionnaire for each of the research variables analyzed to determine the average respondents' responses to each variable are presented in the following table:

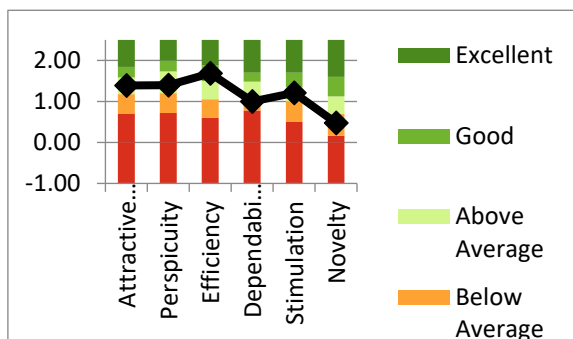
Table 2. UEQ Scale Measurement Results

Variable	Sakala UEQ	Evaluation
Attractiveness	1,38	Positive
Perspicuity	1,40	Positive
Efficiency	1,63	Positive
Dependability	1,00	Positive
Stimulation	1,20	Positive
Novelty	0,47	Neutral



Picture 1. UEQ Scale Measurement Results Graph

Figure 1. showed that the results of the evaluation of each variable measuring a user's experience using the User Experience Questionnaire (UEQ) on the Bibit fintech application were obtained from 30 respondents who filled out the questionnaire. Aspects of attractiveness, perspicuity, efficiency, dependability, and stimulation managed to have an average value greater than 0.8 or were at the level of positive evaluation, which was characterized by green areas. Meanwhile, the novelty aspect gets an average of -0.8 to 0.8 or reaches a neutral evaluation level, which is indicated by the yellow area.



Picture 2. Results ibenchmark value of UEQ scale of Bibit fintech application

Based on Figure 2. It can be known that the Bibit fintech application when compared to other products that have been tested on the UEQ Data Analysis Tool, the Bibit fintech application gets a good value in the efficiency aspect, while attractiveness, perspicuity, stimulation get above average values and dependability aspects and novelty gets below average scores.

c. Interpretation User Experience Questionnaire

Based on the results of descriptive statistic analysts that have been carried out using the User Experience Questionnaire, the following conclusions can be drawn:

1. In the attractiveness aspect, it received a positive evaluation value of (1.39), which means that the Bibit fintech application generally has the impression that users like it as a whole.

2. In the perspicuity aspect, the positive evaluation value is (1.40) which can be concluded that the Bibit fintech application is easy to understand by users, because of its relatively high clarity value.
3. In the efficiency aspect, it received a positive evaluation value of (1.68), which means that the features offered can be used by users in the Bibit fintech application quickly.
4. In the dependability aspect, it received a positive evaluation value of (1.00) which shows that the features offered can be used by users in the Bibit fintech application appropriately.
5. In the stimulation aspect, it gets a positive evaluation value of (1.21), which means that this value shows that the Bibit fintech application is interesting and useful, it also encourages users to always use it again.
6. In all aspects of UEQ, on average, all aspects get a positive evaluation value, except for the novelty aspect which gets a fair/normal evaluation value of (0.47). for monotonous and conventional items, each has a normal impression value of -0.1 and -0.1, indicating that the majority of users believe that the Bibit fintech application is still monotonous and conventional. Thus, innovation and creativity in development must increase for the Bibit fintech application in the future

2. Hasil Concurrent Think Aloud (CTA)

The task scenario testing in this study obtained as many as 10 respondents, this data collection was carried out directly to meet with the respondents. The data obtained from the application of usability using the Concurrent Think Aloud (CTA) method obtained data in the form of problems or difficulties faced by respondents when using the Bibit fintech application.

Table 3. Data Concurrent Think Aloud Respondent

No	Question	Respondent Success Rate	Obstacles Experienced by Respondents
1	Now that you are on the main page of the fintech seedling application, please login to the system	B : 10 TB : 0	-
2	Now that you are on the main menu of the fintech bibit application, please find tutorial information using the Bibit application	B : 10 TB : 0	-
3	Next you want to see one of the mutual funds on the Bibit application	B : 10 TB : 0	-

4	Next, please find the Bibit application help center	B : 10 TB : 0	-
5	Next, please buy one of the mutual funds on the Bibit application	B : 10 TB : 0	-
6	Next you want to activate a regular saving schedule on the Bibit application	B : 7 TB : 3	Not knowing the process of activating a regular saving schedule
7	Next you want to see and know the E-statement transaction History for the last 1 month on the Bibit application	B : 8 TB : 2	Don't know where to download E-statement Transaction
8	Furthermore you can search and join the official community of the Bibit application	B : 6 TB : 4	Don't know where the menu is to join the Bibit community
9	Next you want to see the portfolio of mutual funds that have been purchased on the Bibit application	B : 10 TB : 0	-
10	Next, you want to add a mutual fund investment portfolio to the Bibit application	B : 8 TB : 2	Not finding the menu layout to add a portfolio
11	Next you want to sell mutual funds on the Bibit application	B : 10 TB : 0	-
12	Then you can log out directly on the Bibit application	B : 10 TB : 0	-

2. Concurrent interpretation Think Aloud

Table 4.8 is a data table of Concurrent Think Aloud respondents using the Bibit fintech application. Based on table 4.8 describes some of the problems and obstacles experienced by respondents. Here are some of the obstacles experienced by the first respondent where there were 3 respondents who did not know the process of activating the routine savings schedule, secondly there were 2 respondents Did not know the location of the E-statement Transaction download, thirdly there were 4 respondents Did not know the location of the menu position to join the Bibit community, fourth there were 2 respondents who did not find the location of the menu to add a portfolio. Based on the results of observations that have been made, the obstacles experienced by respondents are

because the respondents did not find these menus / were not commonly used. After being traced back to the root of the problem experienced by the respondent, the researcher also conducted interviews with all respondents regarding why the problem could arise. Based on the results of interviews conducted with all respondents, the problem on average arises because respondents use the Bibit fintech application only when they want to sell and buy mutual funds, therefore when respondents are given the task of selling and buying mutual funds they can do it, because that's all they know.

B. Discussion

The discussion of the results of the research conducted was an analysis of the level of effectiveness, efficiency, and satisfaction of respondents obtained from the usability analysis process using the User Experience Questionnaire (UEQ) and Concurrent Think Aloud (CTA) methods.

1. Effectiveness

Measuring effectiveness can be used to measure the number of errors made by respondents as they complete a task. Measurement by looking at each error that occurs results in the percentage of errors in each task run by the respondent The following is the percentage result in each task run.

Table 4. Concurrent Think Aloud Results

No	Question	Number of Respondents	Number of Errors	Percentage of Error Count
1	T1	10	0	-
2	T2	10	0	-
3	T3	10	0	-
4	T4	10	0	-
5	T5	10	0	-
6	T6	10	3	30%
7	T7	10	2	20%
8	T8	10	4	40%
9	T9	10	0	-
10	T10	10	2	20%
11	T11	10	0	-
12	T12	10	0	-
Average of All Respondents				91%

To find out the level of effectiveness, you can find out through the formula percentage of effectiveness as follows:

Percentage of Effectiveness:

$$\frac{\text{Average weight of measurement}}{\text{Number of levels of success criteria}} \times 100\%$$

$$= \frac{109}{120} \times 100\% = 90\%$$

The results above show that the percentage of effectiveness in the Bibit application is 90%, which

means that the Bibit fintech application is very successful / very effective when used.

1. Efficiency

The time efficiency in running a system conducted by respondents in the research conducted was measured by the speed with which respondents operated or ran a system. The calculated time is using the duration of the video results carried out, starting from the respondent working on the entire task scenario along with the respondent running the Bibit fintech application system.

Table 5. Calculation Results and Overall Relative Efficiency

Respondent Code	Average Task Efficiency	Average Task Efficiency in Percent
R01	1	100%
R02	1	100%
R03	1	100%
R04	1	100%
R05	1	100%
R06	0,7168	72%
R07	0,7606	76%
R08	0,6396	64%
R09	1	100%
R10	0,8488	85%
R11	1	100%
R12	1	100%

Each task done by the respondent is then calculated with the Overall Relative efficient formula, the total score of all tasks is then divided into the total tasks. From the total score of all respondents, it was then averaged so that the results of the efficiency calculation for usability testing on the Bibit fintech application were obtained, which was 91%, which can be said that the Bibit fintech application was efficient because the efficiency result reached 50%.

1. User Satisfaction

Based on the calculation process that has been carried out using the UEQ Data Analysis Tool that has been presented in figure 4.2, namely the results of values in each aspect of UEQ to find out how user satisfaction is. So, the level of satisfaction of respondents from the UEQ aspect Based on figure 4.2, it can be seen that the Bibit fintech application when compared to other products, the fintech Bibit application gets a good value of (1.68) in the aspect of efficiency while in the aspect of attractiveness (1.39), perspicuity (1.40), stimulation (1.21) gets a value above average (above average) and dependability aspects (1.00) and novelty (0.48) get below average scores, which means that these results show that Bibit's fintech application in general is good. However, it still needs to be improved in terms of usability, especially in terms of dependability and novelty, by providing the right and correct features in

order to help complete the tasks performed by users and keep up with technological advances.

2. Relationship of UEQ results and Usability CTA Testing

Evaluation conducted using UEQ and CTA usability testing of Bibit's current fintech applications, The attractiveness aspect of UEQ received a positive evaluation with an above-average value scale. When dug deeper using CTA usability testing, it was found that users felt comfortable when using the Bibit fintech application which was directly proportional to the indicators (uncomfortable / comfortable) which were in the positive category.

The clarity aspect of the UEQ received a positive evaluation with an above-average value scale. However, when dug deeper using CTA usability testing, there are some icons and features that are difficult for users to learn in direct proportion to indicators (easy to learn / difficult to learn) that are in the neutral category.

The efficiency aspect of UEQ received positive evaluation with a good scale value. When dug deeper using CTA usability testing, users felt that the Bibit fintech application was efficient when used directly proportional to the indicator (not efficient/efficient) which was in the positive category.

The accuracy aspect of the UEQ received a neutral evaluation with a below-average scale value. When dug deeper using CTA usability testing, users felt that the seedling fintech application could not be predicted the location of icons and features on the Bibit fintech application, directly proportional to the indicators (unpredictable / predictable) which were in the neutral category.

The stimulation aspect in UEQ received a positive evaluation with an above-average scale value. When dug deeper using CTA usability testing, users felt that the Bibit fintech application was useful in direct proportion to indicators (useful / less useful) which were in the positive category.

The novelty aspect received a neutral evaluation with a scale value below average. When dug deeper using CTA usability testing, the Bibit fintech application has an icon display that is still monotonous in direct proportion to indicators (creative / monotonous) which are in the neutral category.

3. Recommendations

Based on the results of the user experience evaluation carried out using UEQ, the recommendations given for the Bibit fintech application, namely on the aspects of dependability and novelty because getting below-average scores can be seen as follows:

1. Recommendations on the dependability aspect, providing fintech services that are more supportive and predictable.
2. Recommendations on the novelty aspect, providing fintech services that are much more creative and creative.

3.

Based on the results of the Effectiveness and Efficiency evaluation carried out using CTAs related to obstacles experienced by users, the recommendations given for the Bibit fintech application are as follows:

1. Not knowing the process of activating a regular saving schedule. The recommendation is that on the main menu there is already a routine saving icon, preferably when clicked by the user there is a picture of the steps to save regularly.
2. Do not know the location of the downloaded E-statement Transaction. The recommendation is that the E-statement Transaction should be placed together in the portfolio so that users can directly download the E-statement Transaction.
3. Don't know the location of the menu position to join the Bibit community. The recommendation is that the Bibit community should be placed on the main menu with a portfolio icon, regular savings and referrals so that users are immediately focused on seeing it, where this community is to educate and avoid fraud to users.
4. Did not find the location of the menu to add to the portfolio. The recommendation is to add a menu (add new) to the portfolio at the top of the center to make it easier for users to see it.

V. CONCLUSION

A. Conclusion

The results of the measurements carried out showed that the measurement of effectiveness obtained a value of 90% of the user's success rate in working on scenario tasks and in the measurement of efficiency using overall relative efficiency obtained an average result of 91% which was said to be efficient, while the results of measuring user satisfaction were obtained from the results of UEQ aspect efficiency (1.68) aspect attractiveness (1.39), Perspicuity (1.40), Stimulation (1.21) Dependability (1.00) and Novelty (0.48). This research shows that the Bibit fintech application has been effective and efficient in its use, as well as on user satisfaction to get a positive impression, it's just that in the novelty aspect of getting neutral results, thus innovation and creativity in development must be further improved in the future.

B. Suggestion

Suggestions that can be considered for party Bibit and parties who want to do further research, namely:

1. Researchers only conduct this research on the Bibit fintech application, for further research can conduct a comparative analysis of the Bibit application with other fintech applications.
2. Research has limitations where researchers only research using the UEQ and CTA methods, preferably for subsequent researchers to be able to use other evaluation methods such as SUMI, SUS and Heuristic Evaluation.
3. The Bibit party needs to improve the system in

terms of Usability in the aspects of dependability and novelty. The areas of efficiency, perspicuity, dependability, and stimulation aspects must be maintained and improved to get even better value in the future.

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