

Design of Improvement of the Existing UI/UX in the "Banyuwangi Tourism App" Application to Improve the Quality of Tourism Application in Banyuwangi Regency Using the Design Thinking Method

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Abstract — Banyuwangi Regency has many promising tourist destinations, including Ijen Crater as a natural tourism object, Cacalan Beach as a marine tourism object, and Gandrung Terracotta as a cultural tourism object which is an attraction for tourists to come to Banyuwangi Regency. "Banyuwangi Tourism App" is an application launched by Banyuwangi Regency as a medium of information about tourism in Banyuwangi Regency. This application provides information on tourist destinations in Banyuwangi Regency, Banyuwangi Festival information, information about traditional markets, and ordering food at traditional markets. However, users still experience problems using the application, based on the data obtained, users experience problems regarding ticketing, completeness of information, systems, and UX. System design in this final project will use the design thinking method to design prototypes according to what the user needs. This method consists of 5 stages, namely, Empathize, Define, Ideate, Prototype, Test. The results of this study are a prototype for improving the UI/UX using the design thinking method to provide a more effective and efficient application design for improving the quality of tourism application in the Banyuwangi district.

Keyword — Application, Application Improvement Design, Banyuwangi, "Banyuwangi Tourism App", Design Thinking, System Improvement Design.

I. INTRODUCTION

Banyuwangi Regency is one of the regencies in East Java Province located at the tip of Java Island and directly adjacent to the Bali Strait. With an area of 5,782.50 km², it is the largest regency in Java. As one of the districts that have the widest area. Banyuwangi Regency has many promising tourist destinations, including Ijen Crater as a natural tourism object, Cacalan Beach as a marine tourism object, and Gandrung Terracotta as a cultural tourism object which is an attraction for tourists to visit. came to Banyuwangi Regency.

Tourism promotion influences the process of providing information to tourists. One of the promotion strategies of the Banyuwangi Regency Government is to introduce the tourism sector in Banyuwangi Regency by using the web and mobile-based applications. Banyuwangi Regency itself

already has an application called "Banyuwangi Tourism App" which contains tourism information in Banyuwangi Regency. The application was launched by the Banyuwangi Regency Government on January 5, 2020, and this application is available on the Google Play Store which can be downloaded for free.

The success of an application can be seen from user satisfaction. User satisfaction is defined as a level of feeling of a user because of a comparison between the user's expectations of a product with the real results obtained by the user from the product. The root cause data obtained through interviews with the Banyuwangi Regency Tourism Office on December 21, 2022, and the Head of Banyuwangi Creative Hub on April 10, 2023, is shown in the image below.

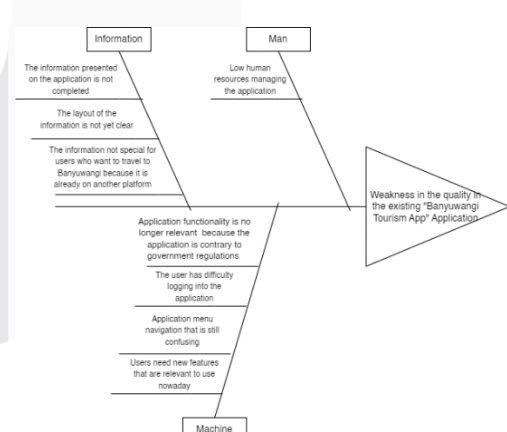


FIGURE 1.
Identify The Root of Problem

Based on the diagram above, here are several alternative solutions obtained by identifying the root of the problem in tabular form below:

TABLE 1.
Alternative Solution of The Problem

No.	Root of the problem	Solution
1	Application functionality is no longer relevant because the application is contrary to government regulations that no transactions are allowed in the application	Design of "Banyuwangi Tourism App" application system improvements become tourism
2	The information presented on the application is incomplete	information media for Banyuwangi Regency.
3	The layout of the information is not yet clear	Designing UI and UX improvements and adding new features to the "Banyuwangi Tourism App" application
4	Users still have difficulty finding information on the application	
5	Application menu navigation that is still confusing	
6	The information presented on the application is incomplete	
7	The user has difficulty logging into the application	Update and system maintenance regularly on the "Banyuwangi Tourism App" application

II. LITERATURE REVIEW

A. System

A system is a whole and interdependent component that works together to achieve some goal. In addition to understanding others, there are systems that include factors and inputs, processes as well as outputs. System is used to support the management, planning, monitoring, directing and delegating work to all departments that have a coordinated relationship.

B. Mobile-Based Application

Mobile application originates from the two words application and mobile. In other words, an application is a ready-made program created to run something for another user or application while a mobile device is to transfer something from one place to another. More specifically, a mobile application is a pre-made program that performs certain functions installed on a mobile device.

C. User Interface (UI)

The user interface (UI) is a way for programs and users to interact. The user interface (UI) is the process of displaying results in a visual form that is visible to the user. User Interface focuses on the visual appearance of an application to produce a display that satisfies users.

D. User Experience (UX)

User Experience is the attitude, behavior, and emotions of the user when using a product, system, or service that

involves individual perceptions related to perceived benefits, and convenience obtained. User experience (UX) focuses on how to provide the best user experience with digital products built by designers.

E. Webqual

Webqual is a technique or method of measuring quality based on the end user's perception of a website. WebQual is a method of measuring the quality of a website based on research tools that can include four variables, namely usability, information quality, interaction quality, and overall impression. WebQual is a method used to measure user satisfaction. Interview questions using the webqual model are shown in the table below.

TABLE 2.
Webqual Model Interview Questions

No	Question	Web Quality Dimensions
1	Does the "Banyuwangi Tourism" application have an attractive appearance?	Usability Quality
2	Does the "Banyuwangi Tourism" application have a clear information layout?	
3	Does the "Banyuwangi Tourism" application all its features work according to their functions?	
4	Does the "Banyuwangi Tourism App" display complete information?	Information Quality
5	Does the "Banyuwangi Tourism" application have a good reputation?	Service Interaction Quality
6	Are there any suggestions to make the application more comfortable to use and attract tourists?	

F. User Acceptance Test

UAT is a verification step to ensure that the solutions developed in the system are in accordance with user requirements. This process is different from system testing which aims to prevent software failures and ensure compliance with user request documents. UAT focuses more on ensuring that the solutions in the system can function properly and meet user expectations, namely by testing the acceptance of these solutions by users in the context of the system.

III. METHOD

A. Design Thinking Method

The Design Thinking method is an iterative, multi-step process to identify and understand users, user problems, and solutions that allow the author to define the problem from a certain point of view. The design thinking method itself has 5 (five) stages which can be seen in Figure 2.

FIGURE 2.
Design Thinking Method Stages



In Figure 2 can be seen, the initial stage of design thinking is empathy, at this stage, the designer is asked to put empathy to get to know the user and understand the desires, needs, and goals of the user. The second stage is defined, at this stage, the designer is asked to identify the data that has been collected from the first stage. The third stage is ideated, at this stage, the designer formulates ideas from the problems that have been identified in the second stage to produce solutions to user problems. The fourth stage is the prototype, at this stage, the designer makes a visualization of the solution to the problem that has been formulated. The fifth stage is the test, at this stage, the designer tests the prototype that has been made and produces a product review to find out how feasible the design results are.

IV. RESULT AND DISCUSSION

1. Requirement

Application quality data obtained by means of interviews is shown in the table below:

TABLE 3.
Interview Data

No	Interview Questions	Respondent's Answer
1	Does the "Banyuwangi Tourism App" display complete information?	Complete but still not special for users who want to travel to Banyuwangi because it is already on another platform.
2	Does the "Banyuwangi Tourism" application have an attractive appearance?	It's quite interesting but still needs improvement, especially in the menu section which is still confusing
3	Does the "Banyuwangi Tourism" application have a clear information layout?	The layout is still confusing for users and requires improvement to make it easier for users to use the application
4	Does the "Banyuwangi Tourism" application all its features work according to their functions?	If the function as an information medium was running according to the time of the pandemic, but for now some features are no longer relevant.
5	Does the "Banyuwangi Tourism" application have a good reputation?	Compared to other applications from Banyuwangi, the application is bad because the application for its use is no longer relevant
6	Are there any suggestions to make the application more comfortable to use and attract tourists?	Because it is contrary to government regulations which are prohibited from raising funds or transacting through applications, it may be maximized to make the

	application an information medium whose information is exclusively only in the Banyuwangi Tourism App application, such as recommendations for tourist destinations, recommendations for tour packages, or information about tour package providers in Banyuwangi Regency.
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From the interview data above, the user needs are obtained as shown in the table below.

TABLE 4.
User Needs

Need Statement
Users want information that is presented exclusively in the application
Users want improvements in the application navigation section
Users want fresh and relevant features for today
Users want an attractive interface
Users want the application to become an exclusive information medium from Banyuwangi regency
Users want the recommendation feature for tourist destinations

After getting the results of interviews and user needs, the next step is to determine the solution to the problem that has been obtained from the interview results.

TABLE 5.
Improvement Plan

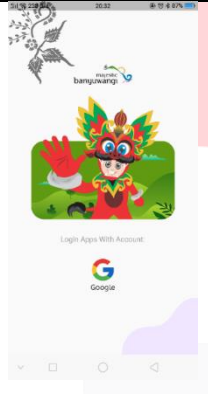
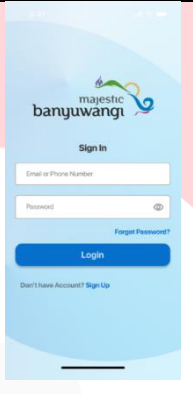
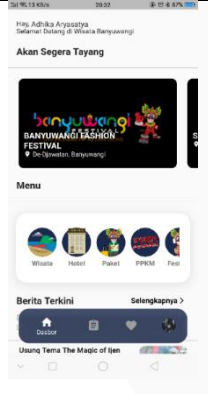
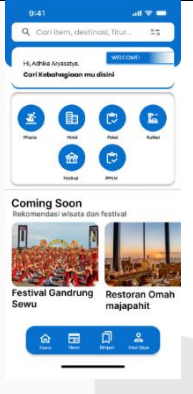

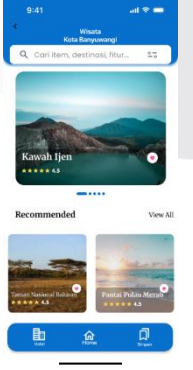
Problem	Solution
The application still needs improvement, especially in the confusing menu section	Prototype design for application improvement proposals using figma.
The layout of the application is still confusing	
Application navigation is still confusing	
Applications need new features to maximize their use	Switching the function of the application into a tourism information media for Banyuwangi
Application is not special for users who want to travel to Banyuwangi because it is already on another platform	
Application functionality is no longer relevant	Switching the function of the application into a tourism information media for Banyuwangi
The application is contrary to government regulations that no	

transactions are allowed in the application.	Regency and maximizing it.
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2. System Design and Implementation

Improvement prototypes are designed based on the improvement plan at the requirements stage. The following is a comparison of the existing application UI and the results of the prototype system and application improvements shown in the table below.

TABLE 6. Comparison Of the Existing Application UI and The Results of The Prototype System and Application Improvements

No	UI Appearance Improvement Plan	UI Comparison	
		Existing Application	Repair Prototype
1	Changing the login system to the application		
2	Changed the layout on the home page and added a search bar		
3	Rearrange the layout of features or content on category pages		





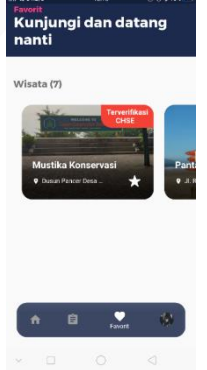
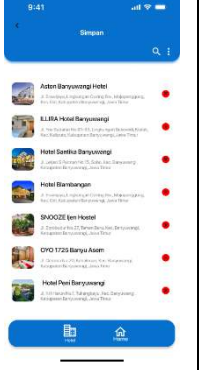
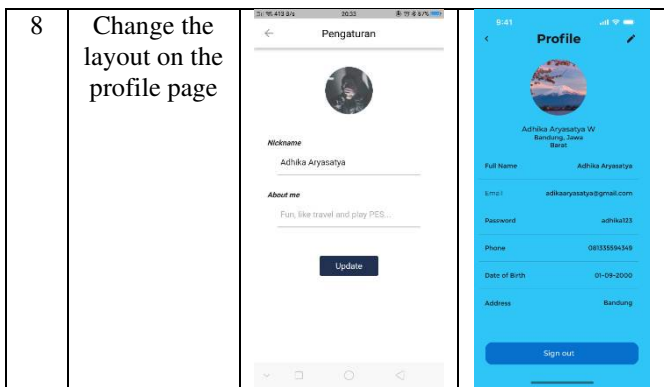
4	Added the contact manager feature		
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TABLE 6. Comparison Of the Existing Application UI and The Results of The Prototype System and Application Improvements (Continued-1)

5	Added rating and review features		
6	Remove the Berita Terkini menu and merge on the news page		
7	Change the layout on the save page		



Do you think this improvement prototype is easy to use?	0	0	1	1	7	87,5%
Do you think users will quickly understand how to use this improvement prototype?	0	0	0	2	8	100%
Is the appearance of this prototype interesting?	0	0	1	1	7	87,5%
Can this prototype be learned easily?	0	0	1	1	7	87,5%
Is the flow of using this prototype easy to understand?	0	0	1	1	7	87,5%

TABLE 6.

Comparison Of the Existing Application UI and The Results of The Prototype System and Application Improvements (Continued-2)

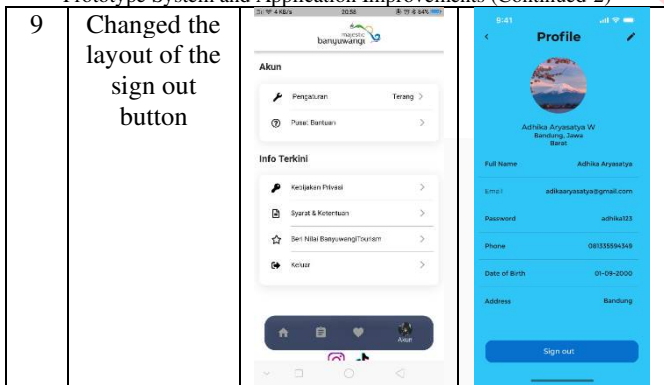


TABLE 8.

UAT Data Processing Results (Continued)

Are the menus and navigation on the prototype display clear and meet usability standards?	0	0	2	0	6	75%
Is this prototype feasible to use?	0	0	2	0	6	75%

The following is an analysis of the calculation results in the table above:

- Analysis of the First Question**
 From the table above it can be seen that the total value of the 2 respondents for the first question is 7. The average value is $7/2 = 3.5$. The percentage value is $3.5/4 \times 100\% = 87.5\%$
- Analysis of the Second Question**
 From the table above it can be seen that the total score of 2 respondents for the second question is 7. The average value is $7/2 = 3.5$. The percentage value is $3.5/4 \times 100\% = 87.5\%$
- Analysis of the Third Question**
 From the table above it can be seen that the total value of 2 respondents for the third question is 8. The average value is $8/2 = 4$. The percentage value is $4/4 \times 100\% = 100\%$
- Analysis of the Fourth Question**
 From the table above it can be seen that the total score of 2 respondents for the fourth question is 7. The average value is $7/2 = 3.5$. The percentage value is $3.5/4 \times 100\% = 87.5\%$
- Analysis of the Fifth Question**
 From the table above it can be seen that the total value of 2 respondents for the fifth question is 7. The average value is $7/2 = 3.5$. The percentage value is $3.5/4 \times 100\% = 87.5\%$
- Analysis of the Sixth Question**

3. Testing

At this stage the results of the prototype design for system and application improvements are tested and assessed by existing system and application developers using the User Acceptance Test method questionnaire. The UAT questionnaire assessment weight and the results of the assessment are shown in the table below.

TABLE 7.

UAT Questionnaire Assessment Weight

Scale	Information
1	Strongly Disagree
2	Disagree
3	Agree
4	Strongly Agree

TABLE 8.

UAT Data Processing Results

Question	Mark				Score	Percentage %
	1	2	3	4		
Does this prototype have features that match its functionality?	0	0	1	1	7	87,5%

From the table above it can be seen that the total score of 2 respondents for the sixth question is 7. The average value is $7/2 = 3.5$. The percentage value is $3.5/4 \times 100\% = 87.5\%$

7. Analysis of the Seventh Question

From the table above it can be seen that the total value of 2 respondents for the seventh question is 6. The average value is $6/2 = 3$. The percentage value is $3/4 \times 100\% = 75\%$

8. Analysis of the Eighth Question

From the table above it can be seen that the total value of 2 respondents for the eighth question is 6. The average value is $6/2 = 3$. The percentage value is $3/4 \times 100\% = 75\%$

After doing the above calculations, the results of each percentage are averaged, and the average percentage value is 85.93%. After calculating the percentage, proceed with qualifying the system based on the criteria from the following score interpretation.

TABLE 9.
Score Interpretation Criteria

Percentage	Qualification
0% - 25 %	Very bad
26 % - 50 %	Bad
51% - 75%	Good
76% - 100%	Very Good

From the table above it can be concluded that the results of the assessment percentage of 85.93% are in the range 76% - 100%, so it is qualified in the very good category so that the prototype can be accepted to be implemented on the existing "Banyuwangi Tourism" application system.

V. CONCLUSION

The conclusions that can be drawn are based on the results of the research, namely the design results of this research are in the form of an application improvement prototype using the design thinking method. Based on the results of interviews and filling out the user acceptance test assessment questionnaire with existing system and application developers, it can be concluded that the design results are acceptable and will be implemented after the prototype of the results of UI/UX application improvements is studied by the existing application developer and the submission of a budget for implementation is accepted by the Banyuwangi district government. It is hoped that after the implementation of the

prototype of the design, results can increase user satisfaction in the "Banyuwangi Tourism" application.

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