

# USER INTERFACE ANALYSIS IN MOBILE BANKING APPLICATION USING DESIGN THINKING METHODS WITH USER SEGMENTS FOR ELDERLY OF PEKANABARU (STUDY CASE : BANK XYZ)

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## ABSTRAK

Perusahaan perbankan XYZ membuka layanan perbankan dengan konsep memberikan layanan kepada masyarakat yang menggunakan mobile banking. Namun, pengguna mobile banking saat ini harus memiliki kartu identitas terlebih dahulu, menggunakan mobile banking minimal berusia 18 tahun dan tidak ada batasan usia maksimal. Rata-rata penggunaan mobile banking adalah generasi Y dan Z, yaitu pada skala usia 18 hingga 35 tahun. Oleh karena itu, penelitian ini bertujuan untuk mengkaji berapa banyak pengguna lansia yang menggunakan mobile banking XYZ. Sebagai analisis pengalaman pengguna jangka panjang memiliki karakteristik dalam memfasilitasi pengguna dalam hal kegunaan serta pengalaman pengguna saat menggunakan aplikasi. Studi ini memberikan analisis komparatif Design Thinking dan pengujian kegunaan. Pengujian usability dilakukan pada 5 responden lansia. Pengguna aplikasi didasarkan pada empat parameter, yaitu tugas yang diselesaikan, kesalahan selama kinerja tugas, waktu per tugas yang diselesaikan, dan jumlah klik selama kinerja tugas. Setelah dilakukan pengujian, responden diwawancarai untuk mengetahui tanggapan dan permasalahan yang dialami selama pengujian ini, hasil pengujian usability menunjukkan bahwa aplikasi XYZ Mobile unggul dalam parameter task complete. Namun banyak lansia yang bingung cara menggunakannya, banyaknya huruf yang ukurannya tidak sesuai dengan sudut pandang lansia. Hasil kuisioner menunjukkan bahwa aplikasi XYZ Mobile memiliki nilai unggul dalam aspek perpicuity, efficiency, dependability, dan stimulation. Setelah data diolah dan dianalisa, dapat disimpulkan bahwa aplikasi XYZ Mobile memiliki aspek User Interface yang sangat kurang, terutama untuk pengguna yang berusia lanjut, baik yang berusia 40 tahun ke atas. Melihat hasil penelitian sebelumnya mengenai aplikasi mobile banking untuk lansia mendapat respon yang positif, hal ini menjadi motivasi bagi penulis dalam melakukan penelitian ini untuk mendapatkan respon yang lebih baik terutama dari para lansia yang berusia 60 tahun ke atas, sehingga agar aplikasi layanan yang dibuat nantinya dapat bermanfaat bagi para lansia. Oleh karena itu, dalam perancangan ini untuk lansia perlu diketahui kebutuhan apa saja yang dibutuhkan dalam aplikasi mobile banking ini, serta mudah digunakan untuk mengakomodir kebutuhan mobile banking mereka agar para lansia dapat terus menggunakannya. Oleh karena itu hasil dari penelitian yang dilakukan pada penelitian ini adalah, didapatkan perbandingan kategori penerimaan dari "Tidak Diterima" sampai "Diterima", skala nilai yang akan diterima dan peringkat kata sifat dari "Buruk" sampai "Baik". Dari nilai tersebut desain prototipe dapat dikategorikan dalam rentang yang baik dengan grade A dimana desain prototipe dapat diterima oleh pengguna. Penulis mengajukan penelitian ini untuk menghasilkan model antarmuka yang sesuai dengan tujuan dan kebutuhan pengguna dalam menggunakan layanan MBanking XYZ dapat dicapai dengan menggunakan Design Thinking yang dapat mempermudah mendapatkan Mobile yang tersedia untuk para lansia dari umur 60 tahun ke atas.

## ABSTRACT

XYZ banking company opens banking services with the concept of providing services to people who use mobile banking. However, current mobile banking users must first have an identity card, use mobile banking at least 18 years old and there is no maximum age limit. The average use of mobile banking is generation Y and Z, namely on an age scale of 18 to 35 years. Therefore, this study aims to examine how many elderly users use XYZ mobile banking. As a long-term user experience analysis, it has the characteristics of facilitating users in terms of use and user experience when using the application. This study provides a comparative analysis of Design Thinking. Was conducted on 5 elderly respondents. Its use is based on four parameters, namely tasks completed, errors during task execution, time per task completed, and number of clicks during task performance. After testing, respondents were interviewed to find out the responses and problems experienced during this test, the results of the usability test showed that the XYZ Mobile application excels in completing the parameter task. However, many elderly people are confused about how to use it, many letters whose size does not match the elderly's point of view. The results of the questionnaire show that the XYZ Mobile application has superior scores in terms of sharpness, efficiency, dependability, and stimulation. After the data is processed and analyzed, it can be ascertained that the XYZ Mobile application has a very lacking User Interface aspect, especially for users aged 60 years and over. Seeing the results of previous research regarding mobile banking applications for the elderly received a positive response, this is a motivation for the author to do this to get a better response, especially from the elderly aged 40 years and over, so that the applications made later can be useful for the elderly. Therefore, in this design for the elderly it is necessary to know what needs are needed in this mobile banking application, and it is easy to use to accommodate their mobile banking needs so that the elderly can continue to use it. Therefore the results of the research conducted in this study were, obtained a comparison of the acceptance categories from "Not Accepted" to "Accepted", the scale of values to be accepted and the ranking of adjectives from "Bad" to "Good". From this value the prototype design can be categorized in a good range with grade A where the prototype design can be accepted by users. The author proposes this research to produce an interface model that is in accordance with the goals and needs of users in using MBanking XYZ services. This can be achieved by using Design Thinking which can make it easier to get Mobile available for the elderly from the age of 60 years and over.

## I. INTRODUCTION

Smartphone users in Indonesia from the results of a survey conducted by eMarketer estimates the number of smartphone users in Indonesia as many as 92 million users in 2019. The amount smartphone users make many developments various types of mobile applications available on smartphones [1].

Amount of interest people in using smartphones make good government agencies and the private sector are trying to improve their services through service-based mobile application. The results of research from Bank Syariah Indonesia Pacitan KCP is one of the Islamic banking institutions that has a mobile banking application. The application is a form of Islamic banking services to make it easier for customers to transact anywhere and anytime. Even though the mobile banking application is very useful for customers, there are still those who do not have the application, especially the elderly. This problem is a challenge to pay attention to customers in using and how to use mobile banking. Because what is happening now is a lack of interest, a lack of understanding, a lack of knowledge in using mobile banking. Basically, customers need directions and invitations to be interested in using the mobile banking application. The banking sector is no exception. The many types of mobile applications in Indonesia make banking institutions in Indonesia compete to provide the best service through mobile banking application. According to data on the ATM PRIMA network site in 2018 transaction banking awards with the best predicate, namely largest in transactions, highest in

growth, and fastest in processing applications in Indonesia which is in the 3rd highest rank, namely Bank XYZ [1]. The company also carries out product innovation as a strategies to attract consumer interest by developing features that Strategies to attract consumer interest and assess one of them by an approach to software design that makes users as a benchmark in the application development process. Must have advantages owned by banks that provide mobile banking services to be able to success in the market is a mobile banking application that is a representation of banking itself to customers. According to Nielsen, Heuristic Evaluation is a method usability engineering to find deep usability problems user interface so that it can be used as part of redesign process.

The application is a support to interact with users, a good application is a reflection as a product or service that has a high level of ease of use by the user. It is very important to ensure that the product or service has a good user interface. Mobile banking services function very effectively in helping customers in conducting transactions anytime and anywhere. It can be seen that the data of active users of mobile banking reached 9.3 million users mobile banking. From this data, mobile banking users in Indonesia variety, ranging from young people, old people to the elderly.

Limitations experienced by the elderly such as decreased function and physical, psychological and cognitive abilities, often resulting in decreased mobility of the elderly accompanied by elderly dependence. With a lot limitations possessed by the elderly, then information technology has crucial role in helping the elderly to live more independently, especially in the use of online transactions will make it easier for the elderly to help work on a job they have accomplished, one of which is Mobile Banking.

To run the product quality level of the product must be balanced with the ability of the product. Not all users who use a mobile application feel comfortable, the thing that affects the mobile application is the user-friendly aspect and is easy to use for the elderly who are around 60 years of age and over. To see the level of quality of a product, especially a mobile application by hearing directly the opinions of users with the user interface. The advantage of this research compared to previous research is that it is easier for the elderly to use the mobile banking application because the authors are inclined to make the appearance more attractive, of course the elderly are not difficult to see colors that are not too flashy, making it easier for users to access them, as well as users easily access top up in a form that is not complicated, more efficient and there are not many menu choices in the mobile banking application.

The limitations of the elderly in psychomotor, sensory, and cognitive aspects make interaction with technology sometimes difficult for the elderly. By Therefore, the author wants to design a XYZ mobile banking application for customers the elderly according to the needs of the elderly. Experience analyst testing users use analysis with Design thinking and Usability methods.

## II. RESEARCH METHODS

The modeling flow used in user interface research uses user research which has stages. This research begins by conducting a literature study on supporting theories and previous research on user interfaces, usability, as well as previous studies discussing the same topic to be used as reference material and theoretical foundations for research. From the theoretical basis, the parameters that will be used in the test and questionnaire data are determined.

The test scenario consists of 5 people. After testing the scenarios, respondents will be interviewed to be asked for overall responses regarding the application being tested, and fill out a questionnaire. respondents were taken from test scenario respondents. The icon has the ability to create a comprehensive language by bypassing linguistic cognition. To design and select the appropriate icon set that conveys the message to the client. Because the available banking icons are not full recognized, this study tries to improve the accuracy and validity of icons to make them more distinguishable, better forms of conveying meaning can be seen in figure I.

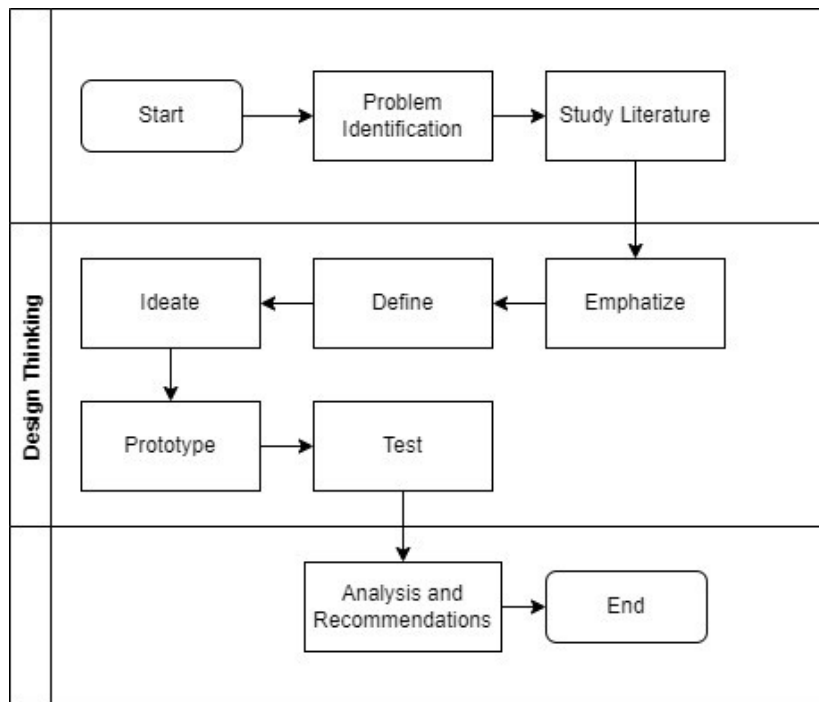


Figure 1. Research Methodology

#### A. Problem Identification

At this stage the researcher identified the problem by conducting some research including user research which be proven from several questions and some comments and by distributing questionnaires to respond- ents. Next, a literature study related to the problems that have been found is carried out [2].

#### B. Study Literature

This research begins by conducting a literature study on supporting theories and previous research on user interface, usability, and previous research that discusses the same topic to be used as reference material and theoretical foundation in research. From the theoretical basis, it is determined which parameters will be used in testing and questionnaire data. Information is collected in the form of theories from the literature that are useful for research as a reference in this research [3].

#### C. Design Thinking

Design thinking is a methodology that provides a solution-based approach cross-disciplinary creative think- ing that combines analytical thinking, creative thinking, and practical skills. Design thinking is in many ways the obverse of scientific thinking. Where the scientist sifts facts to discover patterns and insights, the designer invents new patterns and concepts to address facts and possibilities [4]. Design thinking is an approach to learning that involves hands-on learning projects, focused on inquiry and completion problems, investigating possible solutions, sketching and prototyping, collaboration and feedback, creating 'products' or ideas, as well as reflection and redesign if necessary. Another explanation regarding design thinking is a method for devel- oping innovative solutions to complex problems, intentionally incorporating concerns. Design thinking below

:

##### 1. Empathize

The first stage is to conduct an investigation early by distributing questionnaires to elderly. and come alone feel their anxieties and problems and know the future hope User Persona.

##### 2. Define

Define is the process of determining user problems by utilizing research results and observations at the empathize stage.

##### 3. Ideate

At this stage, all the problem formulations are the previous stage will be thought out and find any solutions you need, so right on target and appropriate.

##### 4. Prototype

Prototype or prototype is the original model that be an example. The prototype provides an overview to the user regarding the system that will be used developed

#### 5. *Test*

This stage is carried out by testing prototypes with real users to obtain feedback and verify whether the design objectives have been achieved..

#### 5. *Analysis and Recommendations*

The results of the analysis and recommendations of the problems found in the management of XYZ mobile banking for the elderly is a technology that already has a role to optimize waste management in mobile bank- ing by using the Design approach Thinking presents four proposed features based on needs, namely the ini- tial. Then the conclusions were found, namely:

- a. The display/feature has provided valid and easy-to-read information
- b. The interface is simple and simple which can make it easier for users, especially the elderly

For users over 50 years old, view recommended is not much different from the XYZ mobile banking ap- plication that currently exists so it's not confusing user. The results of the testing given to several XYZ mo- bile banking customers can concluded that, most of the testers had successfully use the app by following the steps ordered. It is hoped that further researchers will be able to system development as well as being able to add features needed by users and further research can be done regarding optimizing the management of XYZ's mobile banking.

### III. RESULT AND DISCUSSION

#### A. *Design Thinking*

Design thinking is intentionally integrative and aims to rapidly develop and test several possible solutions to arrive at the optimal stage. Design thinking applied to business strategy and business transformation some- times described as integrative thinking (this approach to design a thought center on business innovation and transfo mation, need discovery and unfulfilled opportunities, and the creation of new visions and alternative scenarios), A core element of design thinking is its ability to capture new knowledge. Design thinking con- sists of five stages, namely empathize, define, ideate, prototype, and test. The stages of design thinking as fol- lows :

##### 1. *Empathize*

The main focus of this stage is to seek information and try to understand the user's feelings. Applications that are made must match what users do, say, think, and feel. This is done in order to empathize with the user so that they can have the same point of view as the user. The data generated from this process is in- formation on several problem statements based on the problems faced by the user. This stage is carried out by conducting a survey using a form and direct interviews [5]. And below are some of the questions that were asked during the interview :

1. What is your name?
2. How old are you?
3. What is your current profession?
4. How often do you use the XYZ MBanking application?
5. What feature did you use last?
6. Why are you interested in using the XYZ application?
7. What is your goal by using the XYZ application?
8. Do you often use this feature?
9. In 1 week how many times this feature is used?
10. Are there other features that you often use?
11. Have you encountered any problems in using this feature so far?
12. What do you think is the display design of the XYZ application?
13. What activities do you do on the XYZ application?
14. What needs do you want in the XYZ application?

The results of the form and interviews can be seen in table I :

TABLE I  
 USER NEEDS

Profile	User Needs	Frustrations	Motivations	Goals
Name : Sri Mayati Age : 61 Gender : Female Profession : Motivator	Want the color display on the application features to be more attractive.  Want the efficiency of frequently used features only	The color display design on the home page is not satisfactory  Too many unused app features	The features in the application are quite complete	Display to be more creative so that it attracts users
Name : Riki Pratama Age : 60 Gender : Male Profession: Security	Want efficiency when opening the interbank transfer feature, you can directly choose nominal.	Less efficient on the interbank transfer feature page, too many unused feature options	Want to support this application so that it can be of great interest or use by other users	Can quickly and easily when making transfers between banks
Name : Fitri Ningsih Age : 61 Gender : Female Profession: Cleaning service	Requires efficiency and features Top up e- wallet	The e-wallet top up feature is less efficient, there are too many fields to fill in	Many features that can facilitate all user needs.	Can easily top up
Name : Adi Saputria Age : 61 Gender : Male Profession: Security	Requires an application that follows trends in appearance and features.	In the payment feature, there are too many types of payments that are not needed	Reduce costs by using existing promos in the application	Can claim the promo in the application
Name : Henry Sultri Age : 60 Gender : Female Profession: Cleaning service	Want an application that is efficient, simple and easy to use	Too many features and icons so it takes longer to understand the app	Liked XYZ's features because it makes digital transactions easier.	To be more efficient in meeting user needs

## 2. Define

At the define stage, describing the ideas or views of the user becomes the basis for the application product to be made. Make list list of user needs [6]. The results obtained in the interview process with respondents were then more clearly defined so that they focused on the core of the problem. Every problem found at the empathize stage, a solution will be sought by defining it. The problem definition process is carried out by describing every possible problem that users experience when using mobile banking for the elderly, based on testing and user interviews. The results of the process of defining the problem obtained can be seen in figure 2.

## USER PESONA

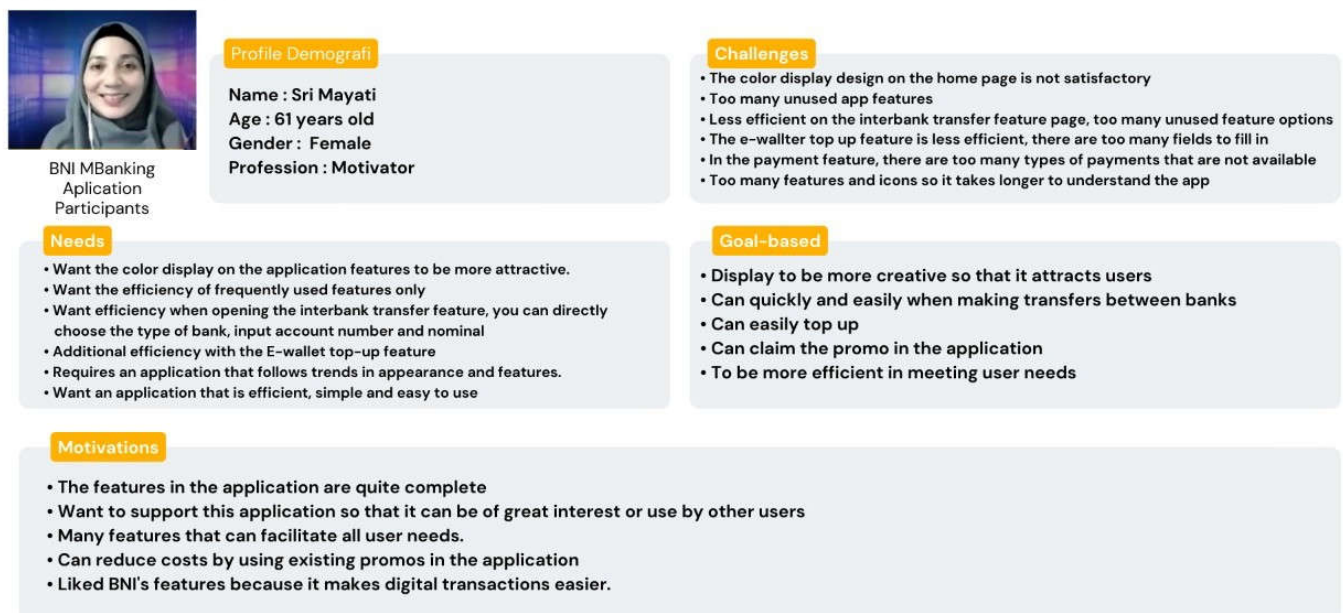


Figure 2. User Pesona

The results of the definition problem obtained can be seen in table II.

TABLE II  
 PROBLEM DEFINITION

No	Problem/Need	Insight
1	Respondent wants made easy when looking for symbols according to them wishes. Respondent wants view other pages in mobile banking with easy.	Categorization of symbols in mobile banking is not appropriate, so that users feel difficulty in finding and determining option in searching for the desired symbol. Too much information viewed respondents when interacting with mobile banking. Information structure and buttons in mobile banking in activities to be carried out by respondents.
2	Respondent wants Respondents want to use mobile banking with effectiveness that is easier to understand.	The flow of storing items in the wishlist confuses respondents because the plot is different from their habits when using other mobile banking.

### 3. Ideate

Mbanking XYZ is an application that will help customers know mobile banking better, especially those that are focused on the elderly aged 60 years and over open the knowledge. Here is a solution that can be given to problems by using some of the features in the XYZ MBanking application among others can be seen in table III.

TABLE III  
 LIST OF USER REQUIREMENTS

No	Skenario	Goals
1	Collecting research results and competitive analysis at the empathize stage	The results of the competitive analysis need to be added to the number of competitors. The research results are complete enough to be forwarded to the next stage, the preparation of the research results is included in a questionnaire that will be given to respondents.
2	Defining the problem and finding ideas at the ideate stage with how might we and brainstorming	The definition of the problem is not precise, the problem analysis can be repeated before starting the next research phase.
3	Making style guidelines, user flow and low-fidelity	Making style guidelines pays more attention to the consistency of icons and buttons. For user flow, it can be equipped again for every activity carried out by the user. Layouting is good, make sure in making high fidelity designs follow the framework that has been made.
4	Making high-fidelity designs and prototypes	Since this section aims to make it easier for elderly users to use it, try to make it easier to click on each time and enlarge the font so that users can easily select features  The design of the color display on the home page is unsatisfactory, so some elderly people tend to use glasses to read it  There are too many features that are not used, it would be better if they were minimized  Less efficient on the interbank transfer feature page, too many unused feature options  Too many features and icons so it takes longer to understand the application
5	How to show that the UI display understandable from the elderly	The selection of colors, icons and layout is good, it's like XYZ bank, but in some parts of the bill payment icon it is better to make the shadow smoother and pay attention to the opacity.
6	How to so that users know the procedure manage mobile banking application	Create view UI becomes efficient and easy to understand  Create feature to display layout how to use mobile banking

### Usecase diagram

In Figure 3 there is a Use Case in which there are user activities starting from registration/login, View balance, Top Up, Payments, View Profile, Scan QRIS can be seen in figure 3.

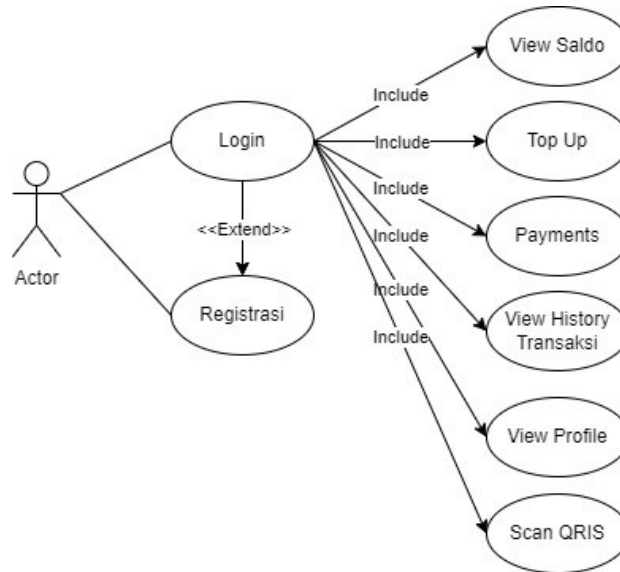
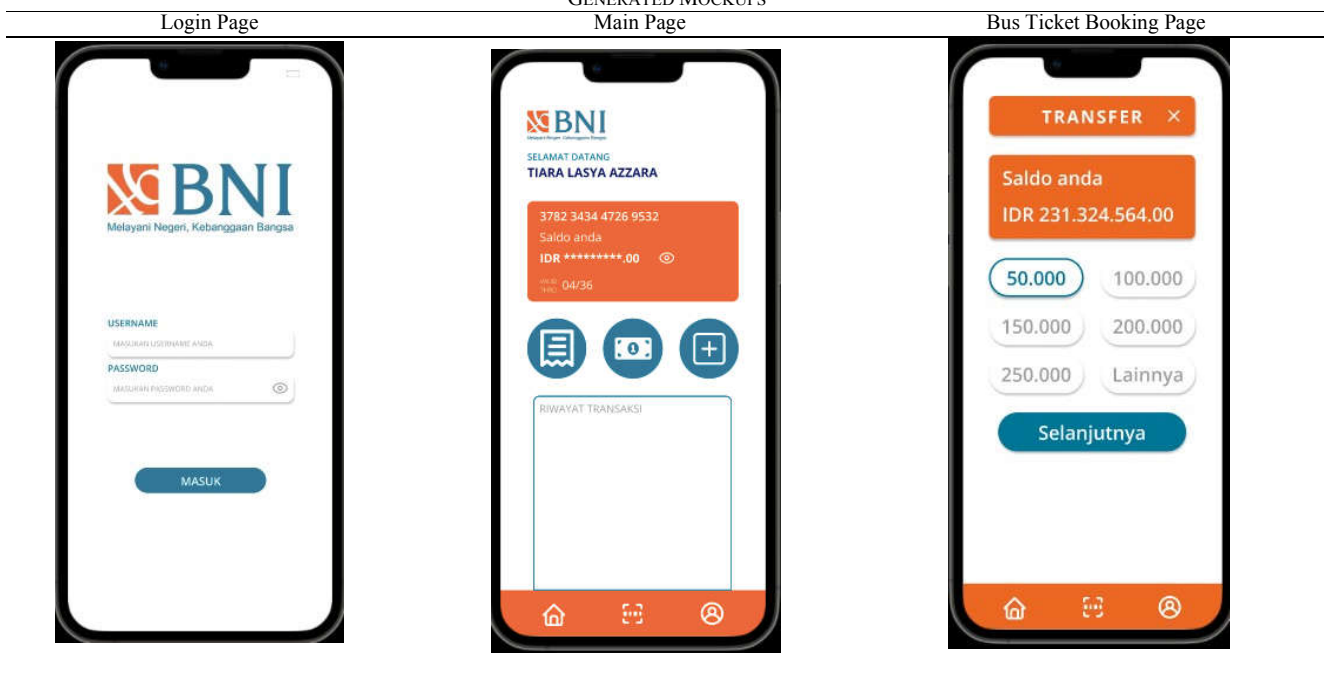


Figure 3. Usecase Diagram

#### 4. Prototype

Based on the results of the respondents analysis of user evaluations interface found some problems both high and low urgency. Most application users are comfortable and familiar with the layout from the menus to the input contained in the application already proportional. Some argue, the appearance of the XYZ Mobile application needs a touch of renewal [7]. This matter because of the increasing number of other mobile banking applications who has implemented a clean, tidy, and minimalist so that it seems more modern. Then a mockup will be generated from the wireframe that has been made along with predefined colors, icons, typography and typography. Then what is produced is implemented in the form of a prototype of the XYZ Mobile Banking application. In table IV are the several pages that were produced in making the mockup.

TABLE IV  
 GENERATED MOCKUPS



#### 5. A. Testing

Testing given to several customers and also the manager of Mobile Banking XYZ can concluded that, most of the tester has successful use of the application by following ordered steps [8]. Researchers use statistical test methods to test the validity and questionnaire reliability. Questionnaire result data tabulated using the System Usability Scale (SUS) method. In the tests carried out determined the



number of sam- ples to be tested. Respondents taken were respondents at the previous research stage, namely 5 users of MBanking XYZ. The selection of respondents was carried out to get feedback from previous tests which were user pain points in the existing MBanking XYZ application. This test is carried out online using Google Meet and field interviews. In testing, users are asked to fill out a Google Form which contains 10 SUS questions represented by a Likert scale from 1 to 5, and 1 question regarding the respondent's re- sponse [9]. The use of SUS is also used as a comparison of the previous SUS results, where previously the SUS value obtained was 10 which means the application is bad for users and requires improvement. Following are the individual SUS questions given to users in table V:

TABLE V  
 SUS QUESTIONES

No	Item in Indonesian
1	Saya berpikir akan menggunakan sistem ini lagi.
2	Saya merasa sistem ini rumit untuk digunakan.
3	Saya merasa sistem ini mudah untuk digunakan.
4	Saya membutuhkan bantuan dari orang lain atau teknisi dalam menggunakan sistem ini.
5	Saya merasa fitur-fitur sistem ini berjalan dengan semestinya.
6	Saya merasa ada banyak hal yang tidak konsisten (tidak serasi) pada sistem ini.
7	Saya merasa orang lain akan memahami cara menggunakan sistem ini dengan cepat.
8	Saya merasa sistem ini membingungkan.
9	Saya merasa tidak ada hambatan dalam menggunakan sistem ini.
10	Saya perlu membiasakan diri terlebih dahulu sebelum menggunakan sistem ini.

In the testing scenario on the MBanking XYZ application prototype, the researcher first contacted respondents who had previously been interviewed and carried out usability testing. The researcher conveyed the aims and objectives regarding the usability testing of the prototype to the respondents in order to provide re- spondents with an understanding of the testing. Next, the researcher asked respondents about their available time to test the prototype. Then at the previously agreed time, the researcher gave the test tool to the re- spondent via a prototype link for the respondent to try [10]. Furthermore, the researcher asked permission to rec- ord the test and when the test had started, the researcher explained in advance the testing scheme in the form of what steps the respondent would take during the test. After the respondent understood the explanation given, the researcher then asked the respondent to access the link that had been shared. There are 10 tasks given to respondents, the same as the tasks in the previous test. This is done to get feedback whether the pro- totype that has been made is in accordance with user needs. After the respondent completed all the tasks giv- en, the researcher asked the respondent to fill out the SUS questionnaire. This questionnaire is used as a comparison of the results of the SUS questionnaire which had previously been tested on the existing MBank- ing XYZ application.

### B. Test Analys

In the tests conducted on 5 respondents, the results obtained from the maze and the results from the SUS questionnaire were then analyzed for calculations. The purpose of using maze is to make it easier for researchers in the testing process because researchers can manage the flow of interactions to be carried out and also maze can be directly integrated with prototypes made in Figma. Then the purpose of using SUS is to measure the level of usability of the prototype that has been made and whether the value obtained has met the previous research success indicators, namely the average value of 48 of the total value. The use of SUS is also to get a comparison of the results of the value of pre-existing applications with prototypes that have been designed and whether there is an increase in value. Then the average value of SUS is calculated by add- ing up all the end user values then dividing by the number of users so that the average SUS value will be ob- tained. The results of the data that has been taken can be seen in the table VI.

TABLE VI  
 SUS RESULT FROM A PROTOTYPE

Respondent	Score Result Count										Amount	Value (Sum x 2.5)
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10		
1	4	3	4	3	4	3	4	3	4	3	35	88
2	4	3	4	3	4	3	4	3	4	3	35	88
3	4	3	4	2	4	2	4	2	4	3	32	80
4	4	2	4	4	4	2	4	2	4	4	34	85
5	4	4	4	4	4	2	4	4	2	4	36	90
Average/ Qn	4	3	4	3	4	2	4	3	4	3	Final Score	85

From the results of the SUS test table in Table VI, the resulting prototype gets a final value is 85. This value can be interpreted into three assessment categories: grade scale, acceptability ranges, and adjective ratings. The fol- lowing is the result of the interpretation obtained :

1. Interpretation of Grade Scale, where the score obtained is at grade A.

2. Interpretation of Acceptability Range, where the score obtained is in the Acceptable range or the proto-type can be accepted by the respondent.
3. Interpretation of Adjective Ratings, where the score obtained is in the Good rating or the prototype is good.

From the results of SUS, an analysis of the average score of each question can also be carried out to find out whether each question from SUS has a good score or not. Analysis was also carried out from the scores generated by each respondent to determine whether the prototype produced was acceptable to the user. Here are the points earned:

1. The average scores obtained from each SUS question are 3 and 4 which are good scores because if the value is changed to a scale of 10 by multiplying the score obtained by 2.5 because 4 is the highest score in SUS, so if  $4 \times 2.5$  will result in a maximum score of 10. In the results of the average score obtained, if the score is changed to a scale of 10 then it becomes  $3 \times 2.5 = 7.5$  and  $4 \times 2.5 = 10$  which is a good score.
2. SUS Score percentile rank determination of the results of the assessment by means of the SUS percentile rank score differences with the method of assessment Acceptability, grade scale, adjective rating. Differences that occur in the assessment category, on the SUS Acceptability score, grade scale, adjective rating divided into three categories. For that deep determine the SUS percentile rank score according to the following provisions [11]:
  - a. Grade A: with a score greater than or equal to 80.3
  - b. Grade B: with a score greater than 74 and less than 80.3
  - c. Grade C: with a score greater than 68 and less than 74
  - d. Grade D: with a score greater than 51 and less than 68
  - e. Grade F: with a score less than 51
3. The results of the prototype testing were above 68, and the prototypes that had been made could be categorized properly.

In this study using the System Usability Scale (SUS), which is able to provide a measure of the subjective perception of users about the usability of a system. In order to provide complete coverage and full understanding with depth. In this study, each aspect of the sampling criteria for data collection and analysis is explained in detail. More than that, reliability and validity. Questionnaires are created using Google Forms to facilitate the distribution of questionnaires [12]. The prospective respondents selected in this study are users who are used as respondents, this is because job seekers are users who immediately feel the benefits of XYZ mobile banking. The required mobile banking application user data includes name, age, gender and occupation. Research (questionnaire) that has been compiled in Google Form format. Response data obtained can be downloaded for data processing purposes. To calculate the SUS score, the data obtained is then calculated with the following provisions [13]:

- For question items with an odd number (1,3,5,7,9), the weights are obtained by subtracting 1 for each score obtained (Odd – 1)
- For question items with an even number (2,4,6,8,10), the weight obtained is 5 minus the score obtained for each even item (5 – Even)
- The result of the weighting is then multiplied by 2.5
- After finding the results for each respondent, the overall SUS score can be obtained by calculating the average score of all respondents. Mathematically, the formula for calculating the SUS score for each respondent/participant can be formulated as follows :

Figure 10 Calculation Formula

$$\text{Skor Responden} = ((P1-1) + (5-P2) + (P3-1) + (5-P4) + (P5-1) + (5-P6) + (P7-1) + (5-P8) + (P9-1) + (5-P10)) * 2.5$$

Rumus skor SUS untuk semua responden:

$$\text{Skor SUS} = \sum_{i=1}^n \frac{X_i}{N}$$

The resulting SUS score is then interpreted in several versions as follows:

1. Acceptability Ranges

SUS score interpretation based on user acceptance. Rating scale used are Not Acceptable, Marginal, and Acceptable.

## 2. Grade Scales

SUS scores are grouped into 5 grades, namely: A (scores between 90-100), B (scores between 80 - 90), C (score between 70-80), D (score between 60-70), and F (score below 60).

## 3. Adjective Rating

Is an adjective that translates the SUS numerical score into an absolute assessment of usability This adjectives rating scale includes: Worst Imaginable, Awful, Poor, OK, Good, Excellent, Best Imaginable.

## 4. Percentiles

The calculation of percentiles compares the raw data from research results with research databases that have been done previously the average SUS score is 68. This means that the SUS score above 68 is above the average (above average) and the score SUS below 68 is below average.

The results obtained in this study with other studies using the Design Thinking method are because this method focuses on the goals to be achieved and the Design Thinking method already has a flow. However, the difference in results using the Design Thinking method can be seen from the usability value obtained, because various usability methods can be used to determine product results when using this method. In this research, presents the results of calculating the SUS score on the XYZ mobile banking application based on responses from respondents [14]. The value obtained is 85 with shape Acceptable-Not Acceptable, from the calculations in table V it is obtained with Grade A indicating that the mobile banking application made by the author means that it can be said to be "successful" the product produced in the form of a redesign of the Mobile Banking application for the elderly can be categorized as successful because the usability test with the SUS method yields usability results with a value of 85, which means the product can be categorized as successful.

## IV. CONCLUSION

Identification of research problems is one of the most important steps in journal writing. A research problem is a set of conditions that require discussion, informed solutions or decision-making, as well as possible empirical investigations, in the form of data collection and analysis. Basically, research problems are identified from general topics. After the initial assessment was carried out, the general topic was focused on becoming a specific research problem. Based on the results of the implementation of the prototype that has been designed and tested, then an analysis of the user interface is carried out on the MBanking XYZ application. From the results of the analysis carried out, it can be concluded that producing an interface model that is in accordance with the goals and needs of users in using MBanking XYZ services can be achieved by using Design Thinking which can make it easier to get available Mobile Banking information and make it easier to carry out banking transactions in the form on line [15]. Then in prototype testing using the System Usability Testing (SUS) method, users need more simple and relevant MBanking applications. The results obtained are an improvement from the previous SUS test. Obtained a comparison of the acceptance category from "Not Acceptable" to "Acceptable", the value scale of and ranking of adjectives from "Bad" to "Good". From this value the prototype design can be categorized in a good range with grade A where the prototype design can be accepted by users.

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