



UI Design of Medical Check-Up Information System at Pratama Clinic Based on Design Thinking Method

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Abstract

Medical Check Up (MCU) or Periodic health checks are part of occupational health services that are the right of every worker and as part of preventing health risks to all workers and to reduce the risk of sudden death due to illness in the workplace, it is necessary to carry out annual periodic health checks as a worker obligation that must be carried out once a year. The purpose of this study was to design the User Interface (UI) of the Medical Check-Up Mobile application to make it easier for workers to find out the results of their examinations and doctors can evaluate the health status of workers. The object of this study was carried out at the Pratama Clinic of PT. Pertamina Patra Niaga Sub Holding Marketing Region Sumbagsel. The research method in this study is a descriptive method that is usually used to solve problems, by describing and describing the classified data. While the design method used is Design Thinking. The results of the User Interface design can later be used as a proposal to the Pratama Clinic of PT Pertamina Patra Niaga Subholding Marketing Sumbagsel Region for further implementation by the Internal IT Team.

Keywords: medical check-up, design thinking, user interface, mobile

1. INTRODUCTION

PT Pertamina Patra Niaga was launched in 2004, as an entity that focuses on the downstream oil and gas business, having previously been registered as PT Elnusa Harapan in 1997. On June 13, 2020, PT Pertamina Patra Niaga has been appointed as a Virtual Commercial & Trading Sub Holding of PT Pertamina (Persero), and officially legal end-state on September 1, 2021 [1]. Pratama Clinic PT. Pertamina Patra Niaga itself is a place that organizes medical service activities, including maintenance and improvement of health, disease prevention, disease healing and the last is health recovery. One of the efforts to prevent disease or preventive Klinik Pratama by conducting periodic health checks and evaluations. The coverage that has done a Medical Check-Up at the Pratama



Clinic from January 2021 is 312 people consisting of 215 workers and 97 couples [2].

Along with the increasing number of MCU coverage that must carry out examinations, the idea emerged to develop mobile-based technology to support Medical Check-Up services. Medical checkup is a routine procedure that should be carried out by including examinations for clinical prevention services and including to someone who has no signs or symptoms of illness, this is the process of regular medical check-ups [3]. Currently, to do the MCU, a patient must come directly to the Primary Clinic to register or must call the admin. The Pratama Clinic of PT Pertamina Patra Niaga Subholding Marketing Region Sumbagsel already has a hotline service for online Medical Check Up registration via Whatsapp, considering that this is quite efficient and plays a role in preventing the rotation of the risk chain of virus transmission, especially the Covid-19 virus. However, it is felt that it still needs to be equipped with application tools that help facilitate access to mobile-based services.

With so many workers at PT Pertamina Patra Niaga, this will make it difficult for admins in the process of preparing MCU recommendations. For this reason, it is necessary to develop it in the form of a mobile-based interface design (Design User Interface) to make it easier for employees to register. Mobile application is a ready-made program that performs certain functions installed on mobile devices [4]. User Interface (UI) design is the process designers use to create views in computerized software or devices, focusing on appearance or style. UI design has an important role because it is a direct link between the system and its users [5]. In designing this user interface, researchers use the Design Thinking Method. The advantage of the Design Thinking method is that Design Thinking contains stages that define and search for user needs in detail. This method has been used by several previous researchers, including: Design thinking and organizational culture: A review and framework for future research [6], Educating and measuring choice: A test of the transfer of design thinking in problem solving and learning [7], Design Thinking Concept Approach in Ready-to-Drink Ginger Processing Business in Bangsalsari Village Entrepreneurial Community [8], Application of the Design Thinking Method to the UI / UX Design Model application for Handling Reports of Loss and Findings of Scattered Goods [9].

2. METHODS

2.1. Research Methods

Research Methods are frameworks for carrying out an action, compiling an idea that is directed for certain purposes and objectives. The research method used in this study is a descriptive method. Descriptive research is research intended to

investigate the circumstances, conditions or other things already mentioned, the results of which are presented in the form of a research report. [10]

2.2. Design Methods

The design method used for research is the Design Thinking Method. This method is done repeatedly to try to understand the user and redefine the problem in an attempt to identify alternative strategies and solutions that may not be immediately visible to our initial level of understanding. At the same time, design thinking provides a solution-based approach to solving problems.

Design Thinking focuses on user needs, identifying as well as analyzing existing problems. This is because the way Design Thinking works is by observing and analyzing a problem that is being faced by the user, then being able to create a software product that can be used [11]. Design Thinking consists of 5 steps: Empathize, Define, Ideate, Prototype, Test [12], as shown in the image below.

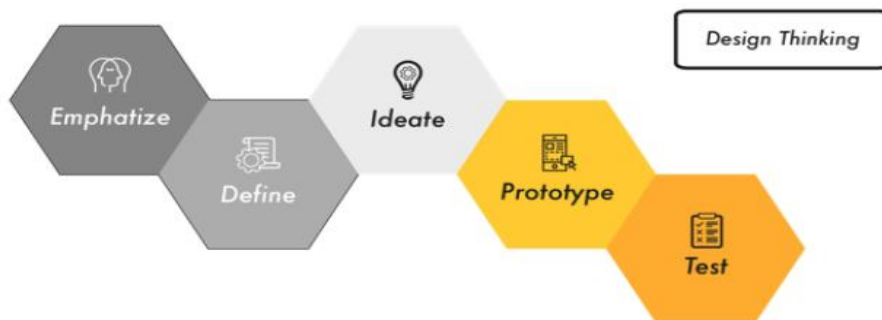


Figure 1. Stages of Design Thinking Method

For the design of information systems Medical Check Up which refers to the Design Thinking method through several steps with work procedures described as follows:

1. Conduct theoretical studies and literature studies from previous studies
2. Building a model based on the Design Thinking method
3. Designing the User Interface, which refers to the Design Thinking method which consists of [12] [13]:
 1. Empathize
At this stage the researcher will carry out activities to find out what is needed by the user through the interview and observation process
 2. Define
At this stage, it will be defined and describe the user's proposals and views that will be the basis of the application product to be created and make a list of user needs.

3. Ideate

At this stage, it will describe the solution needed by conducting an evaluation with the design team and combining the creativity of each application designer.

4. Prototype

At this stage, it will implement the ideas that have been obtained in the previous stage into a prototype and application usage scenario in the form of a mockup.

5. Test

In the test stage, a trial of the mockup that has been made in the previous stage will be carried out. And based on the results of this trial, input will be obtained to improve the application later.

4. Prepare documentation of research results

3. RESULTS AND DISCUSSION

By referring to the Design Thinking Method, the author will explain the results in a flow framework that is in accordance with the stages of the method used so that in the end the design results will be obtained. This result is expected to be able to provide input and ideas in the development of information systems to provide alternative problem solving.

3.1. Empathize Stage

In the first stage of the Design Thinking method, this is a stage to find out the needs of users through the process of interviewing and observing the object of research. In this case, an interview was conducted at the Pratama Clinic to the MCU Admin who served as the officer who handled the registration of MCU participants. The following table is a list of questions related to the MCU implementation process.

Table 1. Questionnaire

No	Questionnaire
1	Has there been an online MCU information system before?
2	In today's manual MCU system, what needs to be added to speed up the MCU process?
3	What are the obstacles of the manual MCU Process now?
4	Have you ever thought about creating an online summoning and registration system?
5	What percentage of workers are netted in each year?
6	What kind of online system does workers expect?
7	What information do you want to get in the information system online?
8	Can I get information on how the flow chart is from the system that has been used?

From the results of the interview mentioned above, an overview of the flow chart of the MCU implementation was obtained as follows.

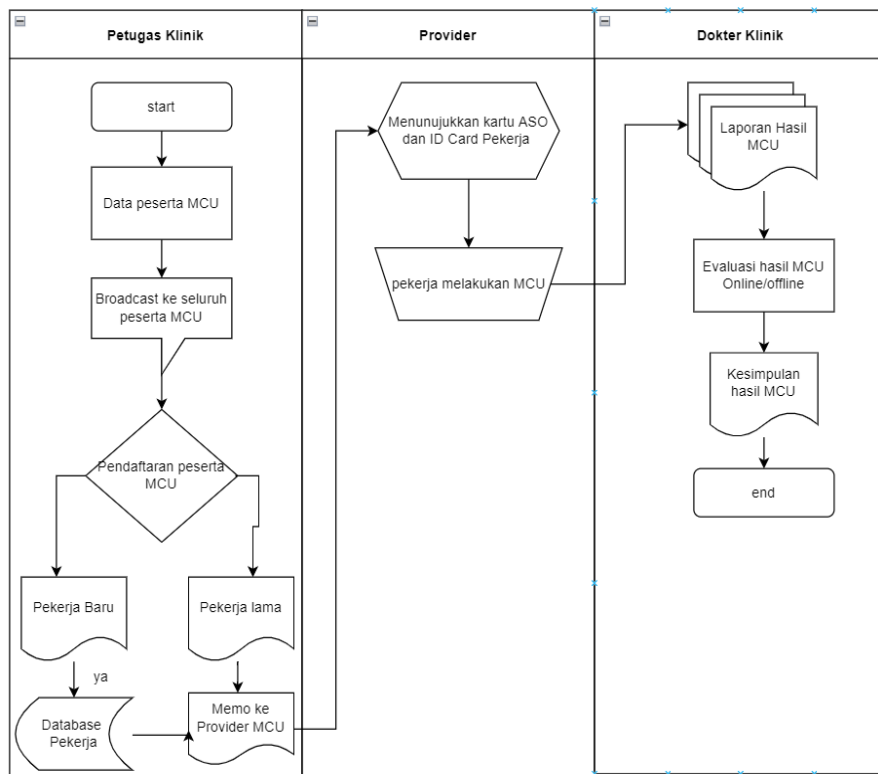


Figure 2. MCU Implementation Flowchart

From the picture above, the design of the MCU Information System UI starts from the patient registering for the MCU and ends after the admin of the doctor at the Pratama Clinic uploads the MCU results that have been sent by the provider as the MCU organizer. To register for the MCU, the patient must register in the MCU information system, so that they can get access to register to check the MCU results through the system.

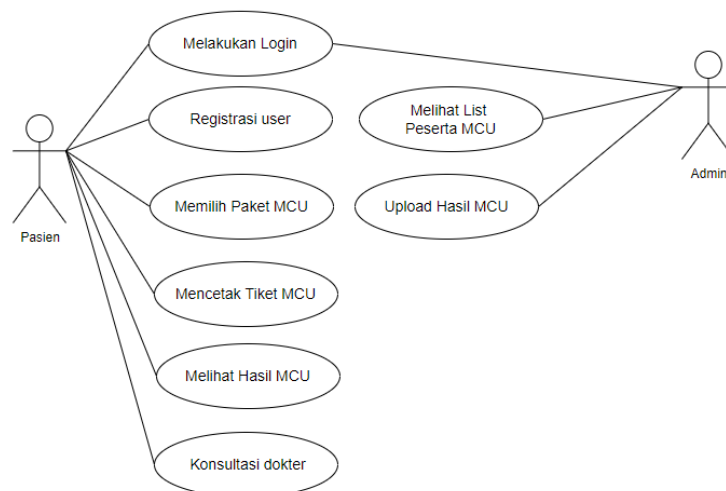
3.2. Define Stage

The Define process is the process of getting an idea or user's view that will be the basis of the application product to be created. This user view usually corresponds to the needs of the user himself in the use of the system. The following is a table listing the user's needs.

Table 2. User Needs List table

No	User Needs List
1	The system can accept logins through the device mobile
2	The system can accept patient registration from mobile devices
3	The system can display a list of MCU packages
4	The system can display the choice of MCU packages served
5	The system can print MCU tickets (MCU memo)
6	The system can display MCU results
7	The system can print MCU results
8	The system can be used to consult a doctor regarding MCU results
9	The system can display a list of MCU registrant patients
10	The system can be used to upload patients MCU results

Based on the table of the list of user needs, it will be identified based on its users, for which a usecase diagram is created. A usecase is a diagram that simply describes globally what a user can do inside the system. This diagram is used to illustrate the relationship between actors and systems. Where the usecase itself is the result of defining the functions of the services used in the system to be built. [14]

**Figure 3.** MCU Information System Diagram Usecase

From the usecase diagram above, it can be seen that there are two users in the UI design of this MCU information system, namely Patient and Admin. Patients are all workers in PT. Pertamina Patra Niaga Sub Holding Marketing Region Sumbagsel. While the Admin here is an employee at the Pratama Clinic who processes MCU registration data.

3.3. Ideate Stage

At this stage, an overview of the solutions needed in the design of the MCU Information System UI will be produced. The solutions produced in this study are described with the Application of Figma Aids. Figma is one of the design tools that is usually used to create the appearance of mobile applications, desktops, websites, and others. Figma can be used on windows, linux or mac operating systems by connecting to the internet [15]. The results of such solutions are described as follows.

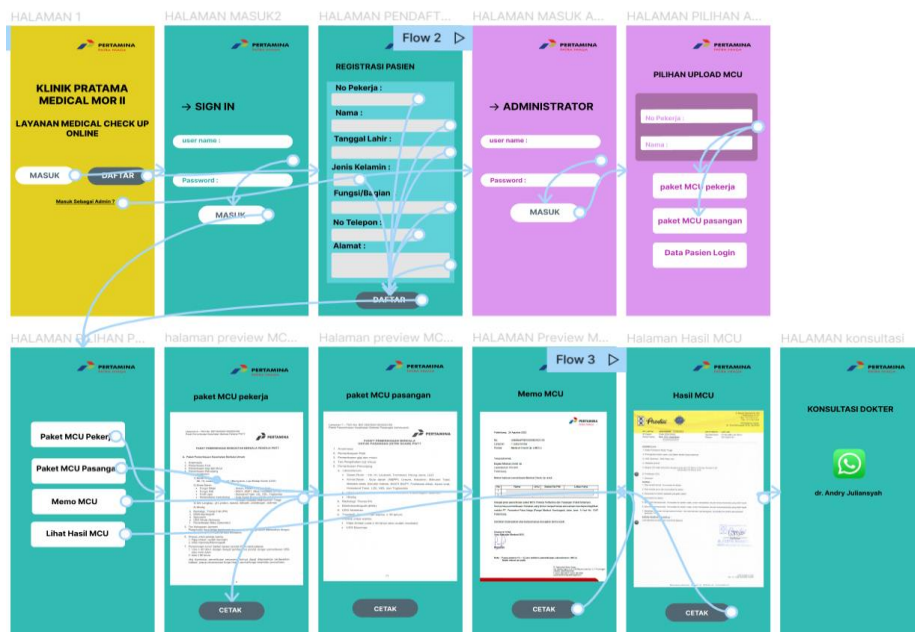


Figure 4. Overview of MCU Information System Solutions

The solution picture above consists of 3 flows. The first flow is the flow for prospective participants who will register for the MCU, both those who have been registered in the system and those who have not been registered. The second flow is the flow for the Administrator actor who will upload the MCU results to the system.

3.4. Prototype Stage

From the design that has been depicted in the previous stage, a mockup of the MCU information system prototype figma is produced as shown in figure 5 below.

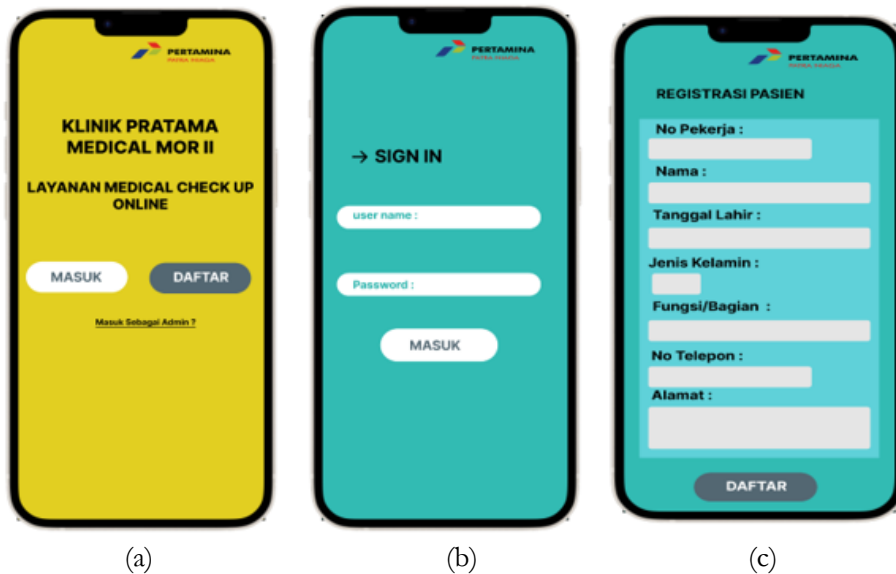


Figure 5. Main Page Prototype (a) Login (b) Registration (c)

Figure 5.a displays the main page of the application. Here patients can log in when they have registered and immediately select the desired MCU Package or select the registration menu. Figure 5.b displays the login page of an already registered patient. Figure 5.c displays the patient registration page.

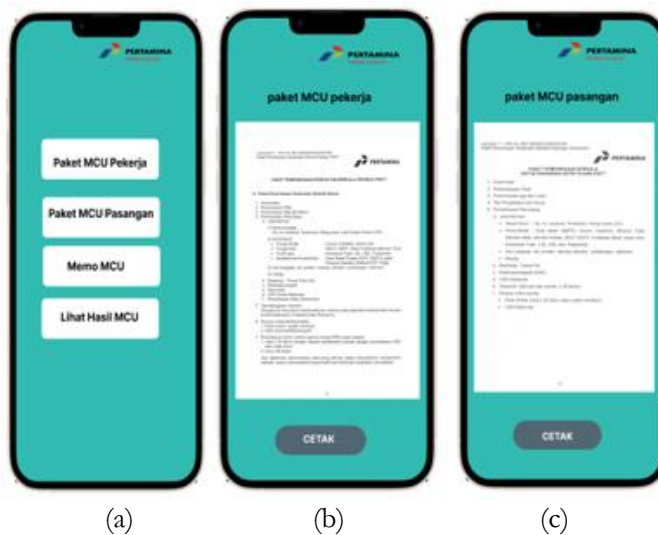


Figure 6. Package Display (a) Worker MCU Details(b) Pair MCU Details(c)

Figure 6.a displays the patient login menu, which consists of a selection of MCU packages, MCU Memos and a button to view MCU results. Figure 6.b shows the details of the Worker's MCU Package, while figure 6.c shows the details of the Spouse MCU Package.

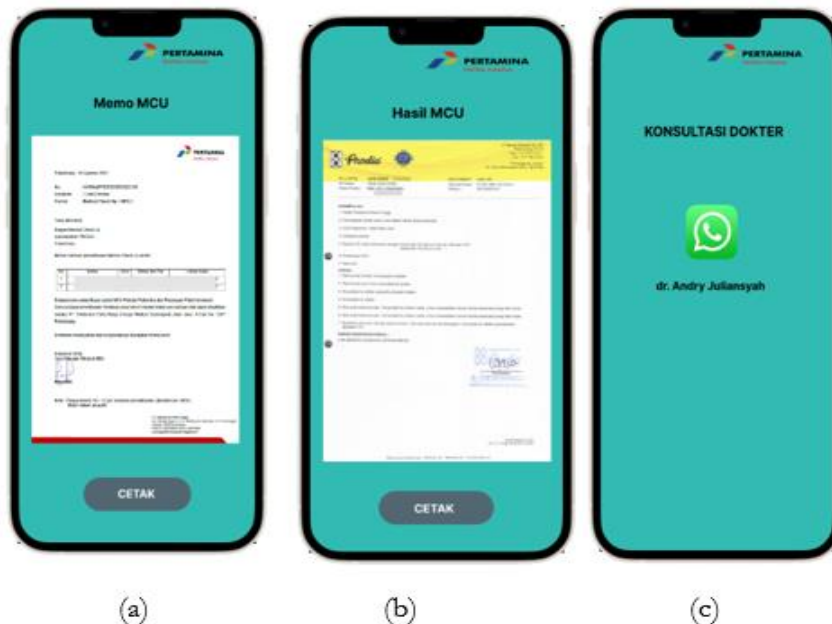


Figure 7. MCU Memo Display(a) MCU Results Display(b) Doctor Consultation(c)

Gambar 7.a Features MCU Memos. This memo is obtained after the patient selects the MCU package. This memo will be taken to the provider to be served by the MCU Package. Figure 7.b Shows the MCU results that have been uploaded by the admin after the patient performs the MCU at the provider. Figure 7.c shows a whatsapp link for consultation services with a doctor.

3.5. Test Stage

The implementation of the test stages in the Design Thinking Method in this study was carried out by running a prototype on Figma. In this prototype, you can see the process flow and procedure of each keystroke and menu in the Figma prototype. Testing is carried out by potential users, by running prototypes that have been produced at the prototype stage. The user in detail observes and records the flow of the process, the move from page to page from each keystroke. After testing the prototype product, the user declares that it is in accordance with the needs and is in accordance with the process flow.

4. CONCLUSION

The design of the MCU Information System UI using the Design Thinking Method produces a User Interface design that can accommodate user needs, because at the Emphasize stage it has gone through interviews with potential users. With the interview stage, users can convey everything about the needs of the system to be built. With a good design, what is sourced to the user will also provide convenience for programmers in coding programs, especially in determining the appearance and flow of the system that suits user needs.

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