Enhancing User Experience for Mother and Children Services at Sungai Duren Health Center in Muara Enim, Indonesia

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Abstract
In the present digital age, it is imperative for us to harness the advancements in technology, particularly in the healthcare sector. The initial step in a medical consultation involves health screening. Traditional health screening relies on interviews and paper documentation. However, over time, the use of paper can lead to data accumulation and potential loss. This research focuses on the creation of a user-friendly mobile application for Mother and Child Health Services, utilizing the Design Sprint method. The Sungai Duren Health Center in Muara Enim Regency, Indonesia, currently lacks essential technology for disseminating information pertaining to Mother and Children Health Services. Implementing supporting technology is crucial for enhancing service quality for health center participants. The anticipated benefits extend to academia, writers, and the users of the application.

Keywords: Design Sprint, mobile app, prototype, User Interfaces, User Experience

1. Introduction
Nowadays, the development of information and communication technology is very rapid, where people are very familiar with the internet and smartphones (Rully Pramudita et al., 2021). These two things go hand in hand to achieve the goals of using the smartphone. This has made many companies and agencies use mobile applications as a support services activities for their users (Arfida et al., 2020). All kinds of things can be obtained via the internet, using the smartphones, which in one hand can be of great benefit to the users (Suroyo & Arfiandy, 2023). Thus, it is not surprising that the majority of people use smartphones for their purposes (Assaufa & Arifin, 2023).

Sungai Duren Community Health Center at Muara Enim Regency, does not yet have a real time mobile application that is connected to the system to control the health of mother and children, where there is need for the health center to control mothers and children who are the health participants. That way, mothers and children can check their health regularly according to schedule (Zuhri et al., 2018). Health participants will receive good education regarding the health of pregnant women and toddlers so that Community Health Center communication will be smooth (Asshiddiq et al., 2020).

The data collection method at Sungai Duren Health Center, Muara Enim Regency only relies on manual methods when collecting data on health participants such as identity, complaints and health history using books provided by the Health Center. Where as we know, the manual method is not flexible (Albert et al., 2021). Considering that smartphones can be used anywhere, of course it would be more productive if used for
data collection at the Sungai Duren Community Health Center. Therefore, it is necessary to design an UI UX for application that can provide health service information quickly and easily, such as results test, medical history data, and other important health information (Tania et al., 2023). This too helps create a more positive user experience and improve overall health management (Suratno & Shafira, 2022).

2. Research Method

Design Sprint is a unique five-day process developed by Google Venture, this method can be used for solving critical problems through prototyping and exchanging thoughts with users (Mendonça de Sá Araújo et al., 2019). All the best ideas are summarized and organized in a short time for creation of excellent ideas (Sutanto, 2022). Design Sprint allows developers and designers to do further learning about end users and reduce uncertainty during design (Brecht et al., 2022). Design Sprint requires several steps in preparation for entering the actual sprint stage, therefore before carrying out the Design Sprint methodology, problems must be well defined (Figueiredo & Fleury, 2019).

Using Design Sprint is very beneficial for the quick process which can also be done when someone solve a problem from a new perspective (Google Venture, 2019).

2.1. Understand

Understand is a Stage where something is determined goals to be achieved, such as developing new products or improving existing products. There are things that can be done at this stage such as identifying problems (user’s pain points) and compiling possible tasks jobs can be selected based on urgency in form of affinity diagram.

2.2 Diverge

Diverge is a stage where each team member presents a solution sketch and then chooses the best solution. The focus of the diverge phase is to explore variety possible solutions. At this stage the researchers explore ideas by making crazy rough sketches using the crazy’s eight method, namely drawing eight rough sketches for eight minutes. At this stage the researcher begins to compose a sketch solution and then choose the best solution for several problems which had been collected previously at the understanding stage.
2.3. Decide

The Decide stage is the stage for uniting and compiling the ideas that have been generated at the Diverge stage. The goal is to select the best ideas and develop more plans details for the prototype that will be made.

2.4. Prototype

The prototype stage is the stage for implementing ideas or a solution that has been obtained and made into a prototype, minimum framework in design. The goal of this stage is creating a prototype that can be tested on users’s Test stage to get feedback from users.

2.5. Test

Testing is the stage when prototype functions or features are tested by users. The goal of this stage is collect input and feedback directly from users will help the team in making decisions and directing development of a product (Rasmila & Wallilah, 2023).

Testing method used in this research is a Usability Study method, a usability study method used to find out how easy a product is by testing directly with users. With this, the researcher can see how users behave and feel when interacting with product. There are several preparations that author has made to achieve usability study, namely:

1. Do the planning. In this section the background will be determined and the purpose of testing, then determined the end-users.
2. Next is to determine the Key Performance Indicator or KPI, KPI is an indicator that shows the performance of a process. By defining KPIs, developers can find out whether the application created is said to be successful or not. Developers can create KPIs in qualitative form or quantitative, in this research the researcher used quantitative KPI. In this research, the author uses KPI which is quantitative in nature, namely SUS (System Usability Scale) which aims to measure product usefulness and NPS (Net Promoter Score) KPI which aims to measure how loyal users are using the product.
3. The next stage is the writing of a manuscript. In this stage, some questions should be answered. The question is not a question literal presented to the user. This question will do testing becomes more focused and structured. As for that question used testing are follows:

<table>
<thead>
<tr>
<th>No</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How easy is it to manage patient control data health participants from start to finish on the application?</td>
</tr>
<tr>
<td>2</td>
<td>How easy is it to view and select the patient control menu on home page</td>
</tr>
<tr>
<td>3</td>
<td>Is the information on the service page clear enough?</td>
</tr>
<tr>
<td>4</td>
<td>Would you like recommend this product to a friend if the application has been released? (NPS)</td>
</tr>
</tbody>
</table>

Source: Research's Result (2023)

After creating manuscripts for SUS and NPS questions, we determined the assessment scale parameters for score SUS and NPS. The Score parameters for SUS and NPS used are scale 1-5 as follows:
3. Results and Analysis

3.1. Understand

There are many things can be done at this stage such as identifying problems (pain points) and compiling tasks jobs that can be selected based on urgency in the form of affinity diagram.

After hearing complaints about whatever happened obstacles in carrying out operational activities, pain points for the problems faced object are prepared.

Source: Research’s Result (2023)

After collecting data related to the problem (pain point) users through interviews tasks are organized into the form of an affinity diagram. We arranged the tasks according to how much urgency of tasks and features that will later be tried out on users.
3.2. Diverge

At this stage, possible solutions that can be given to solve problems in the research object are explored. At this diverge stage we make several rough sketch design using the crazy’s eight method. This is done in order to get it explore the best possible ideas through drawn sketches and later there will be a vote on the sketches that have drawn.

Source: Research’s Result (2023)
Rough sketching with Crazy’s eight allows researchers to create and explore more ideas quickly on the app that will be created. The result of Crazy’s 8 rough will be used for creating low-fidelity designs and high-fidelity designs.

3.2. Decide

At this stage we made a selection of the ideas that have been created at the previous stage (Diverge). Where the ideas that have been chosen will be used as a guide for implementation making the UI UX App design in next stage, Prototype.

3.4 Prototype

The next step is creating prototype for UI Application where some display of the UI applications are created:
The Onboarding page is the first page that will be seen by users, on this page there are step by step instructions, and a guide brief that helps users to understand the basic functions. The main purpose of Onboarding page is to give user an understanding both about how to use the platform or application quickly and effectively. On this page there are several components that users can see, such as picture illustrations and explanatory text regarding the application.

![Login and Register page](source.png)

Source: Research's Result (2023)

Figure 9 Login and Register page

After passing the Onboarding page, the user will be redirected to login page, on this page user will be asked to enter their identifying information such as username and password corresponding to their user's account. Users can also do Log in directly using Gmail which is already registered in the application, if the user doesn’t have account, users can register account on the register page. On the register page user can do creating an account on the application that will be used, on this register page, the users will fill in information such as username and password. Users can also register an account using a Gmail account users themselves.
The Home page will appear to the user after user carries out the authentication process on the login/register page. On this page, users can see several menus related to functions of the application, such as service menu for health participants (mothers and children), list of services location cadres, information on the number of participants and some content regarding health services.
On this page, users can see data on registered mother and children participants as health participant at a community health center, on this page user can also add, edit and delete health participant data. Objective from this services page is to make easier for health workers as users of the application to monitor and collect related data mother and children health services. Users can also communicate online via the participant’s WhatsApp number that has been registered at the time input participant data into health application recorded at the Sungai Duren Community Health Center.

Source: Research's Result (2023)

Figure 12 Add Form for Health Participant (Mother)

Figure 13 Add Form for Health Participant (Children)
On this page, users can add health participant data by filling out a form regarding personal identity information and medical history health participants. After filling in the data on the form, the user can view detailed participant data that has been previously entered on the details page participants listed on the health participant list page.

On this detail page, users can see service participant data health that has been entered in the application.

3.5. Test

After designing the UI/UX of the application, next is the researcher continue research at the next stage, namely conducting UI/UX testing application to several potential users in the research object. The purpose of the testing stage is to find out how easy the features in the Mother and Child Health Services Application.

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</table>

Source: Research’s Result (2023)

Figure 14 Detail Participants Page

Source: Research’s Result (2023)
Table 3 SUS and NPS Scores

<table>
<thead>
<tr>
<th>Question No</th>
<th>User 1</th>
<th>User 2</th>
<th>User 3</th>
<th>User 4</th>
<th>User 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
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</table>

Source: Research’s Result (2023)

Based on the data presented in Table 3, the average results of System Usability Scale (SUS) and Net Promoter Score (NPS) show that the UI UX of the application that has been created is easy to use and users will recommend the applications after release.

4. Conclusion

The study provides additional information and insight regarding understanding the use of design sprint method in creating User Interface (UI) and User Experience (UX) for applications Mother and Child Health Services. From the results and discussion explained in this research, it can be concluded: i) this research produce UI UX for Mother and Children Health Services application for the Sungai Duren Community Health Center, ii) treating the UI/UX of this application using one method application development namely Design Sprint, iii) the application UI UX testing method use the Usability Study Method by giving values to the scenarios used System Usability Scale (SUS) and Net Promoter Score (NPS), iv) overall value of the System Usability Scale (SUS) and Net Promoter Score (NPS) shows a score 4 to 5, which indicates that the UI UX of the app is easy to use and users will recommend the app to other users if the application has been released.

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Author Contributions

Rasmila and Fharid proposed the topic; Fharid collected the data, and conceived models; Rasmila designed the experiments.

Conflicts of Interest

The authors declare no conflict of interest.

References


