

UI/UX Design of Stunting Survey Application Prototype User Centred Design Method

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ABSTRACT

The purpose of this research is to design UI/UX prototype of the stunting survey application according to user needs, namely (a) users can manage family data, (b), manage prospective bride data, (c) users can input questionnaire data, (d) search data, (e) see evaluation of questionnaire survey results, and (f) users can see the coordinate points of the survey results. The method used in the research is User Centered Design (UCD) which consists of 4 stages, namely Understand context of use, Specify user requirements, Design solutions, Evaluate against requirements. This research successfully designed the design and prototype of a stunting survey application that focuses on user needs and convenience. The prototype testing scenario was carried out with 2 experts who each have expertise in the field of UI/UX Designers and in the field of Public Health, the test results showed that the application interface was well received by the testers, and most tasks could be completed smoothly. This shows that the stunting survey application prototype has been made according to user needs, functional suitability, and easy to navigate by users. The results of this research are expected to be implemented in the actual environment so as to get feedback from users, in this case public health officers as surveyors.

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INTRODUCTION

Stunting is a condition where a child's growth is impaired due to prolonged malnutrition, especially during the first 1,000 days of life. This condition not only affects height but also brain development and the child's long-term health. In Indonesia, stunting remains a serious health issue, despite various efforts to address it. Therefore, accurate data collection and appropriate interventions are crucial in reducing stunting rates (Banul et al., 2022). To help address the issue of stunting, a survey application that facilitates data collection in the field is needed. This application must be easy to use by health workers so that it can provide accurate and fast data. For this application to be effective, it must not only be user-friendly but also designed with an optimal user experience in mind, which can be achieved through UI/UX design prototyping

A UI/UX design prototype is an initial representation of the user interface (UI) and user experience (UX) of an application (Andryanto et al., 2023). This prototype is typically created to visualize the structure and functionality of the application before full development begins. The purpose of the prototype is to identify design issues and ensure that the application effectively meets user needs. By using a UI/UX design prototype, the development team of the Stunting Survey application can ensure that the application not only meets technical requirements but also provides an optimal user experience. This is crucial because a good application must be intuitive and easy for health workers to use in the field, ensuring that the data collected is accurate and relevant.

One approach that can be used to develop an effective application is User-Centered Design (UCD) (Lowdermilk, 2013). UCD is a design method that focuses on the needs and preferences of users. In this method, users are involved in every stage of development, from planning to evaluation, to ensure that the application truly meets their needs.

This research uses the User-Centered Design (UCD) method to design a UI/UX prototype for a stunting survey application. The first step is to identify user needs through interviews, surveys, and field observations (Addhifa et al., 2024). The goal of this stage is to understand the needs and constraints of users, such as healthcare workers in various locations and the communities participating in the survey. This information helps determine the necessary features and how the application's interface should be designed to be user-friendly for all users (Angelina et al., 2022). After understanding user needs, the next step is to design the initial prototype of the application. This initial design is based on the analysis of user needs that have been collected. The prototype begins with interface sketches and simple navigation flows, which are then developed into more detailed wireframes and mockups to show the page structure and design elements such as colors and icons. The goal is to create a functional and appealing design that can be further tested (Hamdanuddinsyah et al., 2023).

The next stage involves testing the prototype with end users. This testing is conducted to evaluate whether the design meets the needs and is easy to use. Users are asked to interact with the prototype and complete specific tasks that reflect everyday use of the application (Shirvanadi, 2021). Observations and feedback from users are utilized to identify issues or difficulties in using the application. The data from this testing are analyzed to identify areas that require



improvement. After testing, the prototype is refined based on the feedback received (Prabowo, 2020). This process is repeated iteratively until the desired outcome is achieved. In this way, the resulting survey application is expected not only to function effectively but also to be user-friendly and aligned with user needs.

The User-Centered Design (UCD) approach in developing a stunting survey application offers several advantages. Applications designed with user involvement are generally more easily accepted because they align with the users' needs. Moreover, involving users in every stage of development helps designers understand how the application will be used and determine which features are truly necessary (Latifah, 2023). This approach also allows usability issues to be identified early, thereby reducing the cost and time required for corrections.

The User-Centered Design (UCD) method also ensures that the stunting survey application is accessible to a wide range of users with varying levels of technological literacy. A simple and easy-to-understand interface design allows the application to be used by health workers in the field who may not be familiar with digital technology (Arifin et al., 2024). The application is also designed to function across various devices and network conditions, ensuring that data can be collected efficiently even in areas with limited infrastructure. The development of the stunting survey application based on UCD also emphasizes data security and privacy. Since the application will collect sensitive personal data, stringent security protocols are implemented to protect user information. Thus, the application not only meets functional requirements but also provides adequate protection for user data.

This research aims to produce an effective and user-friendly UI/UX prototype for a stunting survey application using the User-Centered Design method. By involving users in every stage of development, it is expected that the resulting application will enhance the accuracy of stunting data collection and support efforts to reduce stunting rates in Indonesia. This article will discuss each stage of the prototype development, from user needs identification to final evaluation, as well as the challenges and opportunities encountered during the design process.

LITERATURE REVIEW

Stunting Survey

A stunting survey is a data collection process aimed at identifying the prevalence and causes of stunting in children. Stunting is a condition where a child's physical growth and development are stunted due to prolonged malnutrition, especially during the first 1,000 days of life. This survey typically involves measuring children's height and assessing their nutritional intake and health conditions, with the goal of understanding the level of stunting in a particular area and formulating appropriate interventions to prevent and address it (Putra & Muhammad, 2024).

UI/UX Design

UI/UX design is a design process aimed at creating an attractive and functional user interface (UI) and an optimal user experience (UX) (Adila & Nadhifah, 2023). UI design focuses on visual elements such as layout, color, and typography to ensure the application or website is visually appealing and consistent. Meanwhile, UX design focuses on how users interact with the platform, ensuring easy navigation, intuitive interactions, and an overall pleasant experience, so that users feel comfortable and satisfied when using the platform (Andryanto et al., 2023).

User-Centered Design (UCD)

User-Centered Design (UCD) is a design method that focuses on users' needs, preferences, and experiences throughout the development process (Nurohman, 2024). In UCD, users are actively involved in every stage, from initial research, design, and testing to evaluation, to ensure that the solutions developed truly align with their needs and expectations. The primary goal of UCD is to create products or services that are intuitive, easy to use, and provide a satisfying user experience.

Figma

Figma is a cloud-based design tool used to create user interfaces (UI) and user experiences (UX) (Kurniawan & Romzi, 2022)). Figma allows designers to create prototypes, wireframes, and interactive designs collaboratively in real-time, facilitating teamwork. Being web-based, Figma can be accessed from various devices without the need for special software installation. Figma also offers features like vector editing, reusable components, and integration with other tools to support the entire design process.

METHOD

This research focuses on the development of a UI/UX prototype for a stunting survey application using the User-Centered Design (UCD) method. The UCD method has been widely used in various interface design studies to ensure that the resulting product aligns with user needs (Ifandi & Kusumandyoko, 2023). In a study on the design of a tourism application by (Nuriyana & Budi, 2023), the application of the UCD approach allowed for the development of an intuitive and easy-to-use interface, which enhanced user satisfaction. Similarly, (Ghozali et al., 2023) emphasized that the use of UCD in information system development can improve user acceptance through a focus on user needs and experiences.

This research is divided into three main phases: the initial phase, the development phase, and the final phase. During the development stage, the UCD method was used as the research approach (Joko, 2023). In the initial phase, problem identification was conducted through observation and the distribution of questionnaires to identify issues and needs related to user experience. Subsequently, the identified needs were supported by a literature review. In the development phase, the UCD method was applied as illustrated in Figure 1. In the final phase, design decisions and recommendations were made based on user feedback. These design recommendations are the result of a series of evaluations aimed at meeting user needs (Luthfi & Arfiani, 2024).

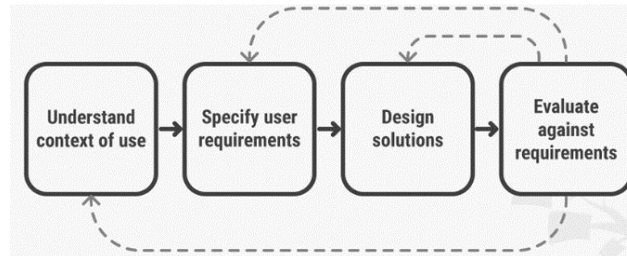


Figure 1. Stages of User-Centered Design (UCD)

- a. Understand context of use
This stage involves gathering information about the users, their goals, and the environment in which the product will be used. It includes a deep understanding of user needs as well as the constraints and characteristics of the usage environment. Additionally, stakeholder surveys are conducted, involving parties who are part of the stunting survey system development.
- b. Specify user requirements
Based on the understanding gained from the first stage, user needs and scenarios are specifically defined. In this stage, researchers outline the usage scenarios through a sitemap. The purpose of creating a sitemap is to map out the menu and features within an application, containing various types of information, page descriptions, images, and more.
- c. Design solutions
In this stage, design ideas are generated and represented in the form of sketches, wireframes, or initial prototypes. This process can be iterative, with many revisions based on user feedback. The final result of this UI design process is a prototype.
- d. Evaluate against requirement
In this phase, the stunting survey application's user interface design is evaluated to determine if it meets user needs and expectations. The evaluation process also determines whether to proceed to the next stage, which is system implementation, or to repeat the previous processes, as shown in Figure 1.

RESULT

Understand Context of Use

Based on the identified characteristics of the respondents, the users are healthcare workers in the field of public health who act as surveyors, conducting surveys within the community for data collection purposes. Surveyors also provide education on stunting prevention within families and communities, thereby helping to reduce the risk of stunting. Some of the common issues faced by surveyors during stunting surveys include: (a) data often being inaccurate due to recording errors, (b) lengthy evaluation processes, (c) recorded data being easily lost, (d) data retrieval processes taking a significant amount of time. Similar challenges are also encountered by stakeholders in their monitoring efforts.

Specify User Requirements

Some of the confirmed user needs are: (a) users can manage family data, (b) manage data of prospective brides, (c) users can input questionnaire data, (d) search data, (e) view the evaluation of questionnaire survey results, and (f) users can view the coordinates of survey results.

The next step is to create a sitemap for the stunting survey application. This sitemap serves as a menu and feature map of the application, containing various information about page navigation and related content. Below is the sitemap for the stunting survey application:

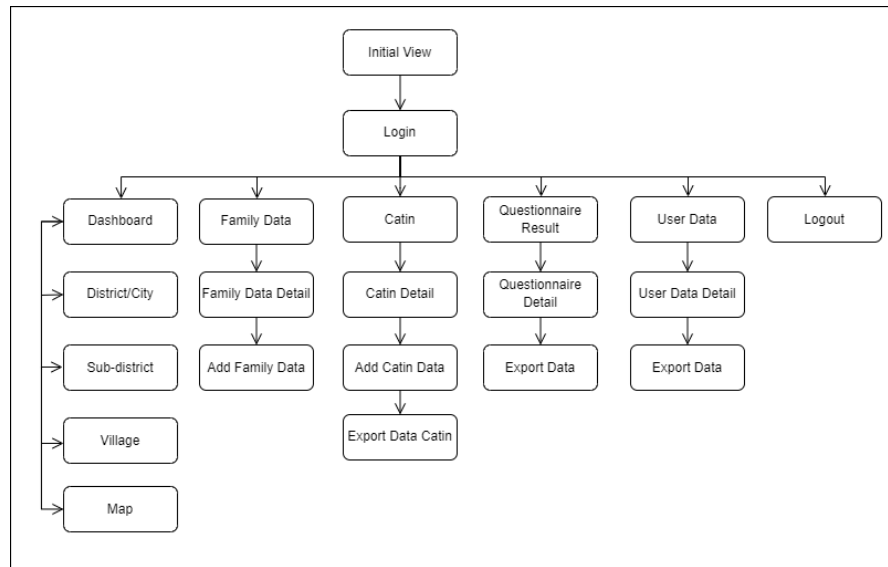


Figure 2. Sitemap of Stunting Survey Application

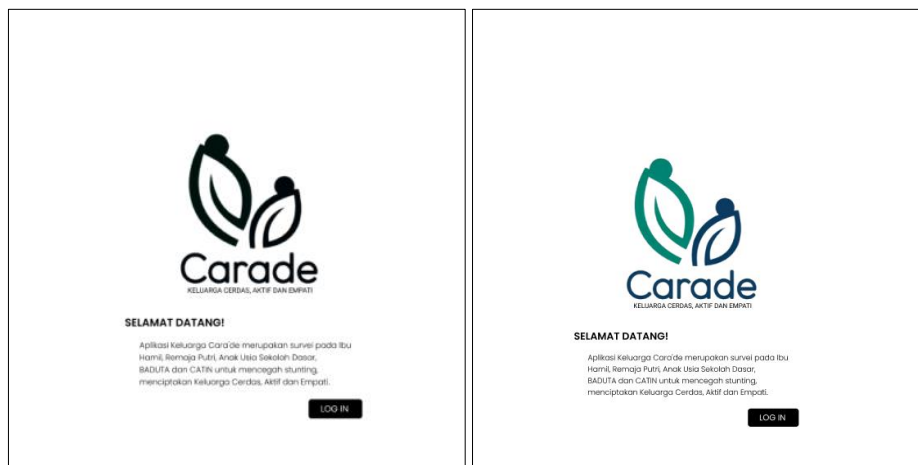
Figure 2 was created based on the survey analysis results to help users understand the application flow. With this sitemap, users can easily find the features they need, which directly supports the application's goal of collecting survey data efficiently.

Produce Design Solutions

Based on the results of the user requirements analysis and the sitemap that has been created, the next step is to produce a design prototype. This process involves creating a Low-Fidelity (Lo-fi) prototype to test the basic concepts of the interface and navigation flow. After getting feedback from early users, the prototype was developed into a more detailed and interactive High-Fidelity (Hi-fi).

a. Creation of Low-fi and High-fi Main Page

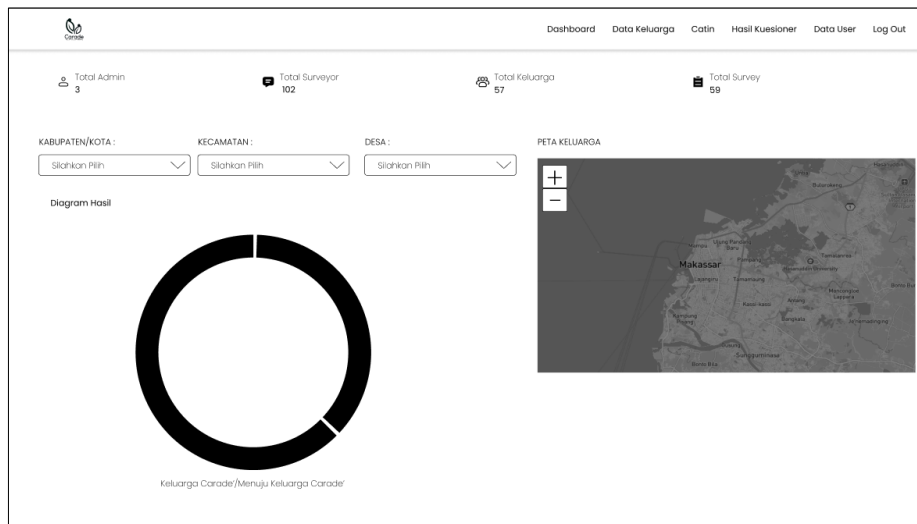
The main page is designed to introduce users to the website's main content and features, build trust, and guide users to take desired actions, such as visiting product pages, filling out forms, or making purchases.



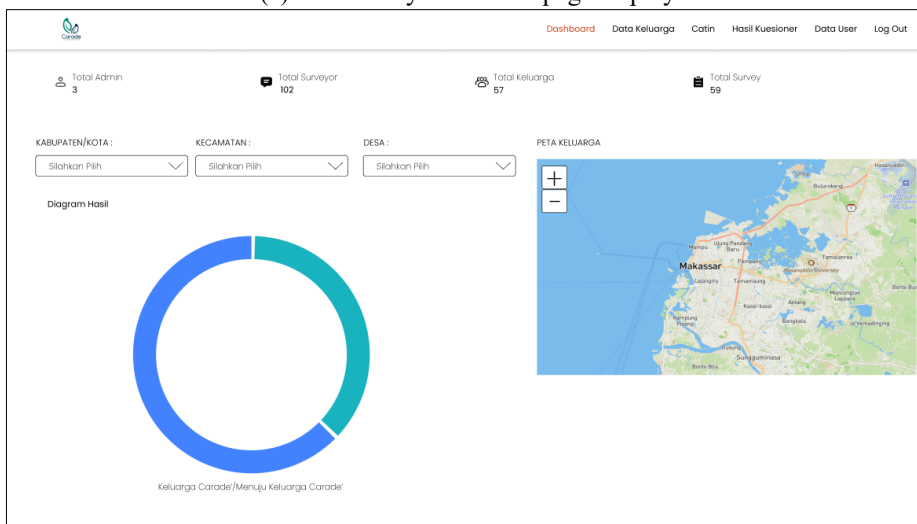
(a) low fidelity main page display (b) low fidelity main page display
Figure 3. Main Page Display

b. Dashboard Page

Dashboard pages aim to provide a comprehensive and concise view of important information and activities, and facilitate quick access to features and data that are frequently used by users. With an efficient and user-friendly design, dashboards help users stay organized and productive.



(a) low fidelity dashboard page display



(b) high fidelity dashboard page display

Figure 4. Dashboard Page Display

c. Prototyping

Next is the prototyping design stage which is useful for making the design more interactive so that potential users can interact like a system.

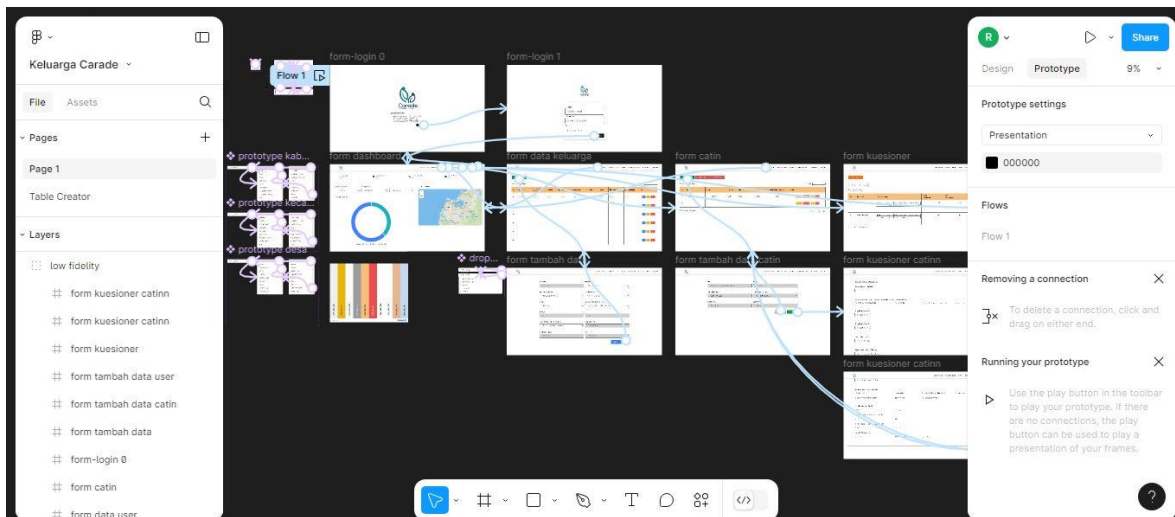


Figure 5. Prototyping View

d. Evaluate Against Requirement

In this phase, researchers create prototype testing scenarios based on user needs. The following prototype testing scenarios have been made.

Tabel 1. Prototype Testing Scenario

Task 1	Users can manage family data
Task 2	Users can manage bride-to-be data
Task 3	Users can input questionnaire data
Task 4	Users can view questionnaire survey results
Task 5	User can search for data
Task 6	User can view the coordinate point of the survey result

Tabel 2. Prototype Testing Results

Users	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6
User 1	●	●	●	●	●	●
User 2	●	●	●	●	●	●

● Current ■ Long enough ▲ Stop

Prototype testing scenarios were made with 6 tasks adjusted to user needs, as shown in table 3. Then the results of the application prototype testing scenario were tested on 2 experts, namely 1 person from a UI/UX Designer expert and 1 person from a Public Health expert. From the test results in table 4, it can be seen that all users can complete the tasks given smoothly. This shows that the stunting survey application prototype has been made according to user needs, functional suitability, and easy to navigate by users.

DISCUSSION

The stunting survey application prototype was created based on user problems and needs using the User-Centered Design (UCD) method. After analyzing the actual needs of the users, the UI/UX design was developed accordingly using the Figma platform. The application's interface design uses a green and white color palette to convey a clean and fresh impression.

The creation of this application prototype focused on ease of navigation, clarity of information, and accessibility. The stunting survey application prototype was then evaluated through user testing involving two experts who were given prototype testing scenarios. The results showed that the testers were generally able to complete the tasks or testing scenarios successfully, although there were some minor obstacles that were effectively overcome. This study successfully provided UI/UX design recommendations that can be implemented for further development, ensuring that the stunting survey application can function optimally and provide a good user experience.

CONCLUSION

This study successfully designed and prototyped a stunting survey application using the User-Centered Design (UCD) method, focusing on user needs and comfort. Testing showed that the application interface was well received by testers, and most tasks were completed smoothly. The UCD method proved effective in creating an intuitive and responsive UI/UX prototype design for public health survey applications like stunting. However, there are several areas that need improvement. One tester experienced difficulty navigating certain features, indicating that navigation and layout still need to be simplified. This study also has limitations, such as a small number of participants and a limited scope of testing, which could affect the generalization of findings. Therefore, further research involving more users and different demographic groups is needed. The main benefit of this study is the design of an easy-to-use stunting survey application prototype, which can increase community participation in health survey programs. This application can assist the government and non-profit organizations in collecting more accurate data and distributing health information. Recommendations for further development include improving navigation based on user feedback and adding features to meet user needs. Testing with a wider and more diverse population is also necessary to ensure broader acceptance of the application.

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