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User-Centered Design to Enhance Young Adult Women's Experience with Menstrual Cycle Recorder App

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Abstract

Menstruation is the period when a young adult woman enters puberty. At this time there is a change in body shape and female sexual organs are more mature. Menstrual cycles between individual women are sometimes different from one another due to many factors such as physiological, and others. This paper systematically describes how researchers evaluate the user experience of an application for recording menstrual cycles and virtual health assistants named Flo, where it was found that there were problems with usability and then improvements were made. A series of systematic steps were taken to redesign the application's user interface in order to improve the user experience with a young adult female user-centered approach. The results obtained were an increase in user experience by 22% with a SUS score of 68 in the young adult female user group.

Keywords: user-centered-design, user experience, menstrual cycle recorde app, young adult women

1. Introduction

Menstruation is the discharge of blood, mucus, and cell debris from the uterine mucosa accompanied by periodic and cyclic shedding (desquamation) of the endometrium (tissue that lines the uterine wall), which begins about 14 days after ovulation [1]. Menstruation is periodic uterine bleeding, which occurs about 14 days after ovulation. The average menstrual cycle length is 28 days, but variations are common [2]. The menstrual cycle is the time from the first day of menstruation until the arrival of the next menstrual period. Menstrual cycles in women normally range from 32-35 days and only 10-15% have a premenstrual cycle of 28 days with a menstrual period of 3-5 days, some are 7-8 days [1]. In this period, a woman is said to have entered puberty as well as changes in body shape and female sexual organs are more mature. Menstrual cycles between individual women are sometimes different from one another due to many factors such as physiological, psychological, and others.

Menstruation is also often referred to as the 'fifth vital sign', in the sense of being an indicator that affects health. Four of them are body temperature, pulse, respiration, and blood pressure. In women plus irregular menstrual cycles, this has been linked to other health factors, such as sexual and reproductive diseases, bone and heart disease, cancer, mental health, and other chronic health conditions. The importance of knowing menstruation indicates the importance of recording the menstrual cycles every month. There are four important benefits that women can get when recording their menstrual cycles. The first is knowing the fertile period so that it can increase the chances of pregnancy. Furthermore, through this record, women can find out when they are fertile so they can schedule sexual activities or it can be used as a natural contraceptive. The third benefit is anticipating Premenstrual Syndrome or PMS. The last benefit is the early detection of problems related to menstruation, such as excess blood, too little blood, late menstruation, and to early menstruation.

By detecting menstrual problems early, the severity can get treatment as quickly as possible. Not infrequently women then record their menstrual cycles for various purposes, including knowing the fertile period for those who are planning a pregnancy or delaying pregnancy, knowing various disorders experienced during menstruation and detecting them early, or simply predicting when the next cycle will start. Menstrual cycles can be calculated easily manually by marking the date on the calendar. This method certainly has drawbacks, including a low level of accuracy for cycle calculations, the possibility of greater human error, and takes a longer time.

In today's digital era, everything is made easy with technology. The process of modernizing the old ways is unavoidable. Of course, the goal is to make everyday human work easier. In general, modernization can be defined as a process of change or transformation from traditional common life towards social, economic, and political patterns that have developed in western countries [3]. According to Terry Barrett [4], the main modern movements and events are democracy, capitalism, industrialization, science, and urbanization. Modernization affects the lifestyle of people who now require easy access to everything. In this case, the way to calculate the menstrual cycle has also evolved to be more modern with the help of digital technology. The method that used to be manual through calendar calculations has become easier through the help of mobile apps that facilitate women's special needs regarding the biological cycle that occurs every month, namely menstruation. The period tracker application is one example of a mobile application developed for this purpose. This application is the right solution so that women can still give special attention to their reproductive organs quickly and accurately. One of the period tracker applications that function to record menstruation is the Flo application. This application is quite popular and has even been ranked 6th in the top grossing in health and fitness in the Play Store. Flo has a 4.9+ rating with more than 2 million reviews and has been downloaded more than 50 million times by 2021. Apart from being a menstrual cycle recorder, Flo can predict cycles, as well as being a virtual health assistant around reproductive health, fertility, and pregnancy from the expert.

In our initial research, we measured the value of the SUS or System Usability Scale on Flo applications, where SUS is a questionnaire to measure the perceived usability of an application and can help determine whether the system can be used properly (usability). In this initial research, we found that this app had a low SUS or a score of 55. This score could indicate that there is something in this app that could be improved and improved to improve the user experience.

By referring to several problem identifications and data that have been discussed previously, researchers are interested in redesigning the UI/UX of the Flo application using a design thinking approach so that the user experience is more pleasant and easier when using the Flo application. In addition, it increases the loyalty of Flo application users and entrusts information about their reproductive organs, especially about menstruation, to the application. By redesigning the UI/UX, it is hoped that it will provide benefits to the community, especially female smartphone users.

2. Method

The methodology used in this research is qualitative with a design thinking approach when developing the UI and UX of the application. Informants were selected using a purposive sampling technique where the researcher determined certain criteria in the selection. The criteria for the informants selected included application users for at least 1 month, females, and aged between 18 to 25 years or entering the young adult group. Through these informants, data was obtained about their experience as users while using this application. In addition, other data were obtained through literature study, a process to find sources, references, and theories related to the research topic raised. Based on these data, researchers can develop the

appearance and user experience of this application by targeting women in the young adult group.

3. Findings and Discussion

3.1 *Redesign Process of The Flo Application*

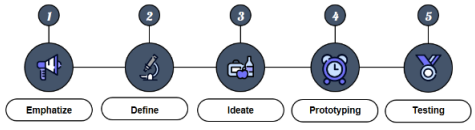

Figure 1. Timeline of Flo Application Redesign

The Design Thinking method can solve complex problems, and the steps for solving them are unknown. The Design Thinking method is currently widely used by unicorn startups and mid-sized startups for product development because this method is an update from the previous method so that it can reduce development time, cost, and effort compared to other methods. In this method, the developer reconstructs the problem from the user's point of view, then generates multiple ideas in brainstorming, using the direct method to create an outline design method. At the end of the method, the developer will test the user [5].

There are five stages in the design thinking method. The first stage in the design thinking method is to explore problems or empathize. In this stage, an approach is made to the resource person and finds out what problems they are experiencing and also their wishes. Initial observation data on the topic of menstruation was obtained from the online female daily forum that recommends what applications can be used by women to record menstrual cycles such as Clue, Flo, and Period Calendar. The ease of access to application user informants was a factor that then made us choose Flo. The second stage is defined. The information obtained in the empathize stage is then analyzed to determine the problems to be identified. This stage helps the resource person to solve the problem. After selecting the problem at the empathize stage, the data is translated in the form of a challenge to be the focus to be solved using the How Might We (HMW) method which is a way to turn a problem into a question. How (H) we explain that researchers still don't have an answer, Might (M) we emphasize that the solution obtained is the right solution but not the only correct solution, and We (W) show that the solution idea is the result of collaboration in terms of these are researchers and resource persons. The third stage is ideation. This stage is a stage to accommodate all and as many ideas as possible to solve problems at the defined stage. Then after getting a lot of ideas, proceed with testing and investigating these ideas to determine the best way to solve the problem or provide the elements needed to avoid problems that will occur. The creation of wireframes and user flows will be carried out at this stage as a form of a solution to the problems that occur in the resource persons. The fourth stage is the prototype. The prototype itself is a simulated version of the final product that serves as a testing medium at the next stage of design thinking. The last stage is testing, which is the stage of testing the prototype that has been made using the System Usability Scale (SUS) method by providing an assessment questionnaire to several sources. Even with small sample groups, SUS provides valid and reliable results because positive and negative questions validate the answers themselves [6].We collected informants who had never used the period tracker application, had used the period tracker but not the Flo application, and had users of the Flo application since 2017. Informants were asked to run a high-fidelity prototype of the Flo application and provide feedback. If the results do not match the needs of the resource person, the prototyping process will be repeated until the resource person's needs for the Flo application have been met.

3.2 *Results*

Based on the results of interviews with 3 informants, the researcher can conclude that the problems related to UI/UX are the layout of the Insights menu which is considered inefficient and messy by the informants, some of the menu displays are not familiar so researchers need to change the format to a format that is already known to the informants. The appearance is monotonous and does not match the image of the informants, namely young adult women who are unmarried and do not have the urgency to track their fertile period or have a pregnancy program or postpone it.

There are 4 statement points with a high percentage value of 4 which were agreed by the informants, namely: (1) difficulty in determining the menstrual cycle and ovulation period on the Flo application, (2) difficulty in understanding terms about female reproductive organs in the Flo application, (3) uncomfortable with the layout of icons and menus in the Flo application, and (4) liking the icon design in the application.

The target audience of the UI/UX redesign work is young adult women aged 20-25 years, from all kinds of educational and occupational backgrounds, who have regular or irregular menstrual cycles, who need virtual health assistants regarding reproductive organ health or more insight into menstruation but has no urgency to delay pregnancy nor in the pregnancy program target audience for the UI/UX redesign are young adult women aged 20-25 years, from all kinds of educational and occupational backgrounds, who have regular or irregular menstrual cycles, who need virtual health assistants regarding reproductive health or more insight into menstruation but has no urgency to delay pregnancy nor in the pregnancy program.

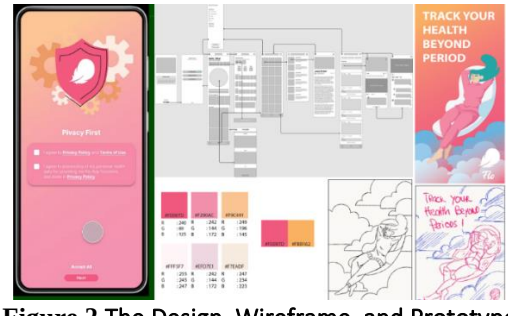

Figure 2 The Design, Wireframe, and Prototype

The impression that the researcher wants to bring in redesigning the Flo application is that women who experience menstruation should feel free of burden because the Flo application has overcome all the problems surrounding the recording of the menstrual cycle which has been a burden for modern women. Carrying out body positivity and menstruation movement campaigns. In this illustration, it gives an empowering impression to women with the presence of a sanitary napkin component – which has been stigmatized as an item that must be hidden – as a point of interest giving a message that menstruation is not something that needs to be covered up because the menstrual process itself is a natural process experienced by women. The Point of Interest in this illustration is a woman relaxing on a pad floating among the clouds. The menstrual pad as a sofa associates the impression of relaxation because during menstruation women often feel tension both physically and emotionally. Images of pink and purple clouds give the impression of being light and carefree. The slogan "Track Your Health Beyond Period" is the slogan of the Flo application that is still maintained. In the previous Flo application design, the color selection in the application tends to be white with a touch of pink which is less dominant. Therefore, the intensity of the appearance of the pink color is increased because that color is a color that has been attached to the Flo application branding.

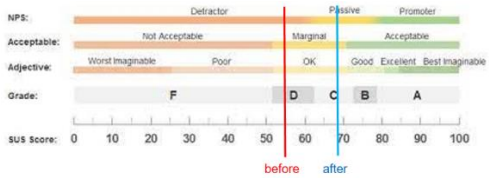

Figure 3 Result of SUS Score Before and After Redesign

Based on the value of the System Usability Score, the average value of the Flo application prototype is 68 which is included in grade B which means OK. When compared to the SUS value of the Flo application before it was redesigned, which had a value of 55, the redesigned prototype had a significant increase in score to 68. The usability level category increased from poor to OK. The average level of the system usability scale is 68. So if the score is below 68, it indicates that there are problems that affect the level of system usability. This means that in terms of usability, based on the data, the assessment can be more acceptable or feasible but still requires a lot of improvement to achieve excellence.

4. Conclusions and Suggestions

In the UI/UX redesign process of the Flo application with a design thinking method approach in the form of a high-fidelity design prototype, researchers were able to identify resource problems when running the Flo application in more detail and on target. The average value of SUS (System Usability Score) on this prototype is 68 which means that the prototype has an ok score. So it can be said that the solution given by the researcher to the resource person is right on target.

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