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Enhancing Acne Care Through Design Thinking: UI/UX Blueprint for Dermist, a Teledermatology Application

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Abstract: Acne is one of the most common skin diseases worldwide. Most patients often resort to self-experimentation with skincare products. Accessibility to dermatological consultations is limited by the lack of on-demand, online services. In addition, treatments often do not address individual skin concerns. With the emergence of telemedicine in the digital era, this research aims to develop a platform tailored to acne concerns to improve acne care by providing accessible, convenient, and personalized dermatological consultations. The study employed a design thinking methodology. Preliminary data were collected to explore potential solutions for women with acne. In-depth interviews during the Empathize stage helped identify user needs and pain points. In the Define stage, insights were translated into problems and solutions using user persona and value proposition canvas. The platform's blueprint was developed with the use of affinity diagrams, information architecture, and user flow. After wireframing, user interface (UI) and user experience (UX) design, the prototype was tested through in-depth interviews and usability testing using Maze.co and system usability score (SUS). Key features included personalized skincare routines, photo scanning for skin analysis, interactive consultation booking, skincare purchasing, a daily check-in feature, and educational modules. Testing with Maze.co revealed a usability score of 94 with a misclick rate of less than 10% across all tasks. Additionally, the application achieved an SUS score of 83.75."Dermist" demonstrates potential as an accessible and effective solution for improving acne care for women in Indonesia, setting a foundation for innovative teledermatology services.

Keyword: User Centricity, Adaptive User Interface, Telemedicine, Teledermatology, Design Thinking

INTRODUCTION

Acne is one of the most common diseases treated by dermatologists. The number of acne cases in Indonesia continued to rise every year; in 2006 by 60%, in 2007 by 80%, and in 2009 by 90%. As a multifactorial disease influenced by internal and external factors—such as hormonal fluctuations, genetics, dietary habits, and hygiene—acne can significantly affect

patients' quality of life, often leading to emotional distress. Limited access to dermatological consultations causes individuals with acne to resort to over-the-counter (OTC) products due to their affordability and flexibility.

Telemedicine refers to the use of telecommunications technology to provide medical services remotely, improving access to care while reducing costs. The Ministry of Health of the Republic of Indonesia issued Regulation No. 20 of 2019 concerning the Implementation of Telemedicine Services Between Health Service Facilities. This regulation provides a legal framework for the use of telemedicine, ensuring that services are delivered safely and effectively.

Activity limitations during the Covid-19 pandemic resulted in alternatives to ensure access to healthcare services, spurring the growth of healthcare service application start-ups utilizing information technology and artificial intelligence. Dermatology is an area in which these applications may serve a particular role, as skin concerns constitute a substantial proportion of consultation demands. However, the existing telemedicine platforms in Indonesia currently lack specialization in dermatology, particularly those equipped with photo scan recognition technology to aid in the diagnosis of dermatological issues.

These conditions present an opportunity to develop a telemedicine platform tailored to dermatological needs, particularly for individuals with acne. This research aims to design a user interface (UI) and user experience (UX) blueprint for "Dermist," a teledermatology app focused on improving access to acne care. Employing design thinking principles, the study follows five iterative stages: Empathize, Define, Ideate, Prototype, and Test. Design thinking is a user-centered approach to problem solving that begins by analyzing the demands of the target audience before looking for creative answers to the problems.

By addressing the gap for accessible and effective acne care, this research seeks to pioneer the integration of design thinking in teledermatology in Indonesia. In addition, this study aims to inspire further innovation in digital health and healthcare delivery, setting a precedent for incorporating user-centric design into telemedicine.

METHOD

The study employed the five stages of the Design Thinking process—Empathize, Define, Ideate, Prototype, and Test—as the overarching research framework. This methodology offers a structured and holistic approach to understanding user needs, generating innovative solutions, as well as refining the application through continuous testing and feedback.

First cycle

The first cycle of this research was conducted before platform development to explore user's demographic backgrounds and preferences, as well as to identify potential solutions for improving acne care. This step shaped subsequent research phases by providing valuable insights into the current state of teledermatology services and user expectations. In the Empathize stage, 60 to 90 minute interviews were conducted with women in their 20s–40s who experienced acne and had previously consulted with dermatologists. The data collected from these interviews were analyzed in the Define stage to generate clear problem statements. Creative solutions were developed in the Ideate stage and translated into prototypes using Figma, which were subsequently refined during the testing phase.

Second cycle

The second cycle of the research aligns with the thesis title and focuses on the continued development and refinement of the teledermatology platform "Dermist." This phase involved more comprehensive research to enhance the platform's features and usability. The research

framework for this cycle is illustrated in Figure 1, which outlines the systematic approach to be followed.

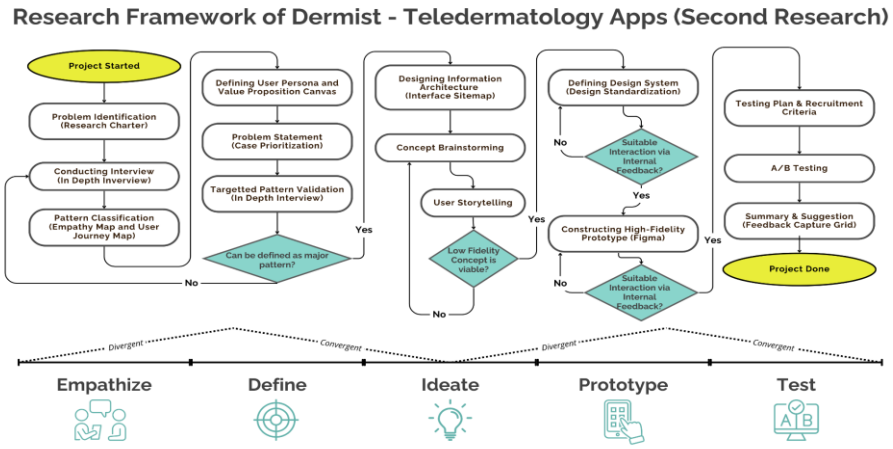


Figure 1. Second cycle research framework

Empathize

In-depth interviews were conducted with women aged 20–35 who had experience with acne and had previously had dermatologist consultations. Each interview lasted 60–90 minutes, featuring 26 questions based on the Stanford "What + How + Why" approach. Responses were analyzed using five service quality dimensions: tangibility, reliability, responsiveness, assurance, and empathy. Empathy and user journey maps were established using gathered data.

Define

The Define stage utilized tools such as the user persona and value proposition canvas to create a user-centered framework. The user persona canvas describes a detailed profile that represents a segment of the user population, helping the design team focus on the specific attributes and preferences that define each user group. Moreover, the value proposition canvas aligned the platform's features with user needs, addressing specific pain points with feasible solutions.

Ideate

In the Ideate stage, tools like the affinity diagram, information architecture, and user flow were employed to bridge user needs with actionable concepts. The affinity diagram categorized user insights into thematic groups to highlight opportunities for feature development. Information architecture organized these features within the app to ensure seamless navigation and functionality and became the backbone for user flow within the application.

Prototype

UI design was developed using Figma. The process began with low-fidelity wireframing and the creation of a design system, followed by high-fidelity wireframing. The UX design focused on crafting and validating core user journeys that aligned with Dermist's goal of delivering a seamless and personalized teledermatology experience.

Test

The testing phase used two primary methods: in-depth interviews and usability testing. Usability testing utilized tools such as Maze.co. Additionally, participants also completed the

System Usability Scale (SUS) questionnaire to assess the application's usability. Using both qualitative and quantitative methods for this phase provides a comprehensive approach to evaluating the application.

RESULTS AND DISCUSSION

First cycle

This cycle began with the Empathize stage, interviewing five women across three age categories (20–30, 31–40, and 41–50 years). Participants had varying approaches to acne treatment, including clinic-prescribed medications, online-prescribed medications, and OTC skin care products. Common pain points across age groups were identified, with the majority reporting difficulty in selecting suitable products and experiencing adverse effects from experimenting with OTC products. Accessing reliable dermatological advice was also a challenge due to geographical limitations or the high cost of clinic visits. Participants emphasized the need for personalized treatment programs tailored to their skin conditions and lifestyles.

In the Define stage, it is found that women in their 20s primarily faced acne, relying on OTC products while showing cautious interest in online treatments. Women in their 30s and 40s, prioritized clinical treatments for barrier issues, wrinkles and hyperpigmentation, with some expressing slight openness to online platforms. These findings highlight the demand for tailored teledermatology solutions, particularly among the 20–30 age group.

During the Ideate stage, three options were explored: a skin care marketplace for unique skin type identification, a healthy lifestyle platform, and a teledermatology app for acne care. Prototypes of each were developed, and after evaluation for feasibility and user needs, the teledermatology app emerged as the primary focus due to its ability to address multiple user pain points through an integrated, personalized approach to acne care.

These insights from the first research cycle provided a solid foundation for the upcoming second cycle, where the UI/UX design would undergo further development.

Second cycle

The second research cycle was characterized by a more focused approach to translating user insights gained in the previous cycle into specific design elements, ensuring the app aligned closely with the target audience’s needs and preferences.

Empathize

In-depth interviews with five women aged 20-35 years revealed user needs and preferences. Respondents expressed a significant need for a supportive, professional, and reliable acne care platform that addresses both practical and emotional needs. Additionally, users highly valued clear product explanations, empathetic communication, and trusted guidance from dermatologists. A user journey analysis of existing similar platforms discovered common pain points, including delayed responses during consultations, limited follow-ups, and inadequate tools for routine adherence. These insights guided the prioritization of features that solve these pain points.

Define

The user journey maps helped classify user personas into three distinct groups:

1. Trust-Oriented Teledermatology User: Prefers telemedicine for consultations but feels frustrated with delayed responses and limited follow-ups.
2. Efficiency-Seeking Dermatology Client: Values professionally-backed offline consultations but finds challenges with complex setups and high service costs.

3. Budget-Conscious Skincare Enthusiast: Prioritizes affordability and accessibility, often purchasing OTC products without professional advice.
   The Trust-Oriented Teledermatology User was chosen as the primary persona for

Dermist as their needs closely align with the platform's features. Figure 2a illustrates an example of this user persona.

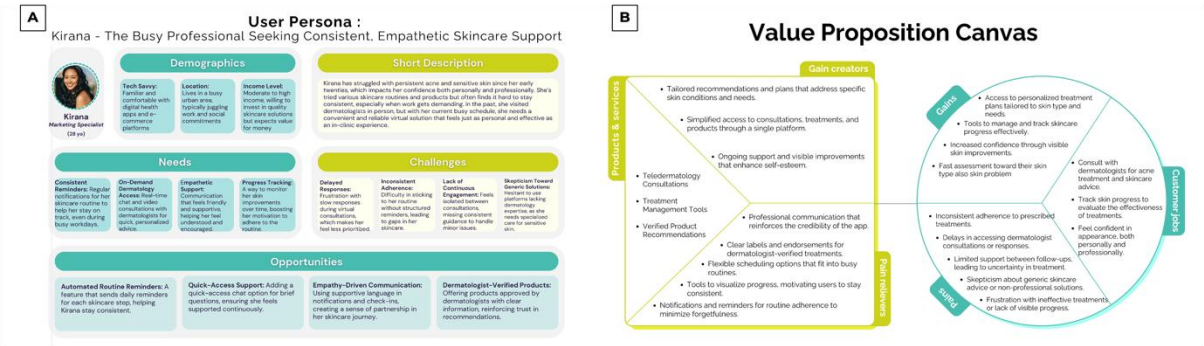


Figure 2. a) User persona of Dermist, b) Value proposition canvas.

The Value Proposition Canvas (VPC) analysis (Figure 2b) outlines the main challenges and aspirations of users. Key insights obtained during the analysis are as follows:

1. Personalized treatment plans tailored to individual skin conditions and lifestyles.
2. Reminders to ensure adherence to treatments, routines, and consultations.
3. Trustworthy, dermatologist-verified recommendations
4. Visual tools to monitor progress.
5. Ongoing support, empathetic communication and proactive check-ins to create a motivating experience.

Ideate

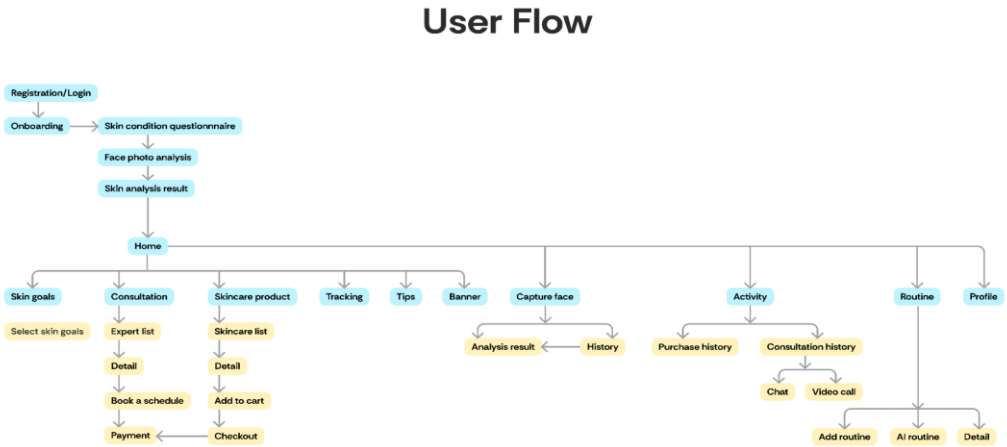


Figure 3. User flow of Dermist

The affinity diagram synthesizes the insights gathered during the previous phases into four core thematic groups: routine management, access to professional support, product recommendations, as well as AI-powered insights and analysis. Structural blueprint of Dermist was reflected in the information architecture, which then became the backbone for the application's user flow (Figure 3).

The application architecture begins with an intuitive onboarding process for easy user entry and a centralized hub for quick access to features. The AI Scan Assessment combines questionnaires regarding external factors such as activity, diet, and environmental exposure and photo analysis for personalized skincare recommendations. Users can also select their preferred skin goals. Customized Routine allows users to preview suggestions, create a routine plan, and track progress for adherence. Product information and purchasing can be accessed in the Skincare Product section. Moreover, the Teleconsultation feature enables easy access to dermatologists by scheduling virtual consultations that can be conducted through chat or video call. Additionally, Order & Delivery and Profile functionalities ensure seamless information on purchase history and personal preferences.

Prototype

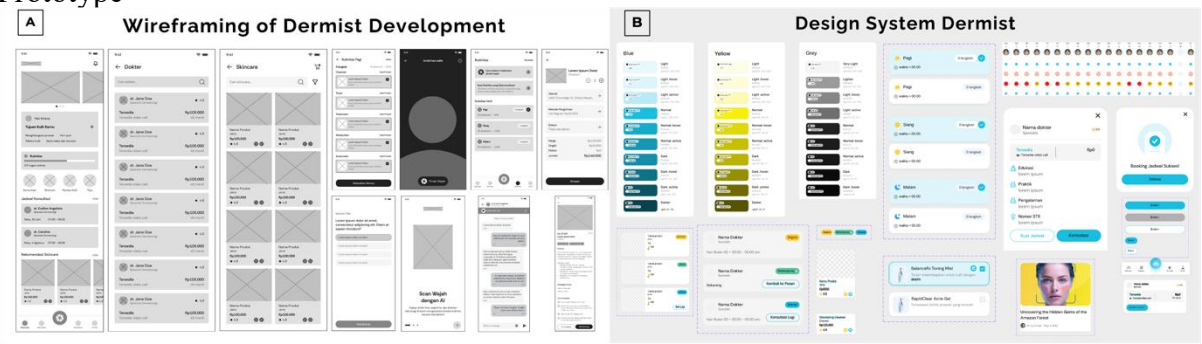
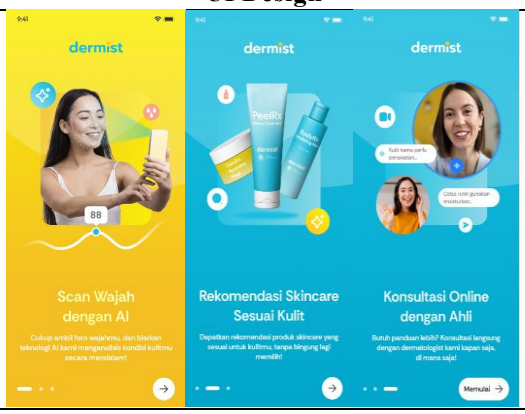


Figure 4. a) Low fidelity wireframing of Dermist, b) Design system of Dermist

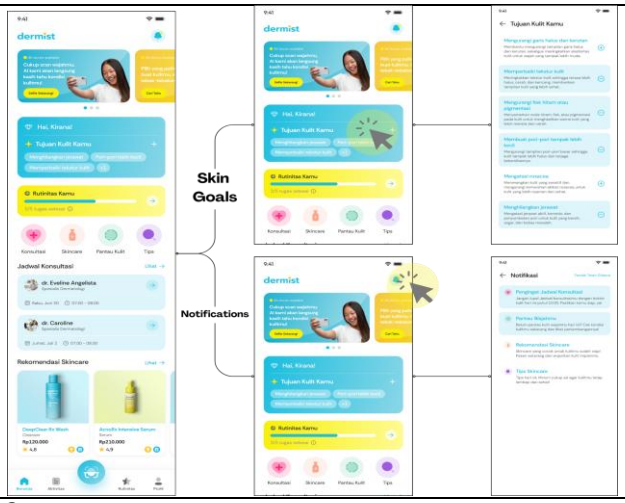
In the beginning of this stage, low-fidelity wireframing was conducted to define component placements and user navigation paths (Figure 4a). The design system of Dermist, shown in Figure 4b, integrates a carefully selected color palette, typography styles, and interactive components. Blue, yellow, and grey tones dominate the color scheme, reflecting professionalism, approachability, and trustworthiness. This color palette emerged as the most favored option during in-depth interviews with users.

The process of UX design during the prototype phase focused on validating user journeys to align with Dermist's goals. Key UX journeys tested include AI-photo scanning, daily check-ins, teleconsultation, and skincare orders. The complete high-fidelity prototype, UI design, and features of Dermist are further elaborated in Table 1.

Table 1. User interface design of Dermist

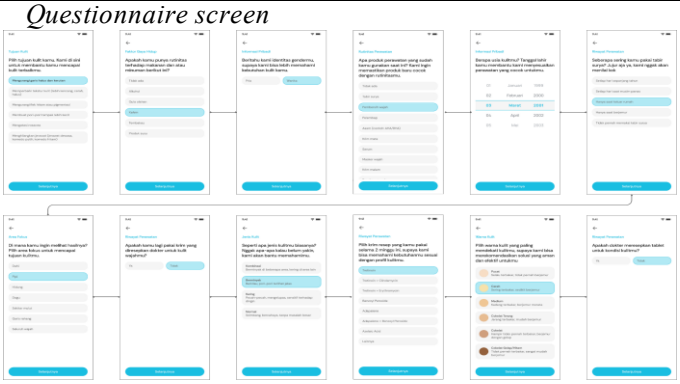
Module and Explanation	UI Design
Onboarding This module introduces new users to the Dermist app and guides them through the setup process.	

Home, skin goals and notifications
This module serves as the user's central hub. It displays personalized skincare goals, routine progress, and real-time notifications for reminders, updates, and product promotions.



a. Questionnaire screen

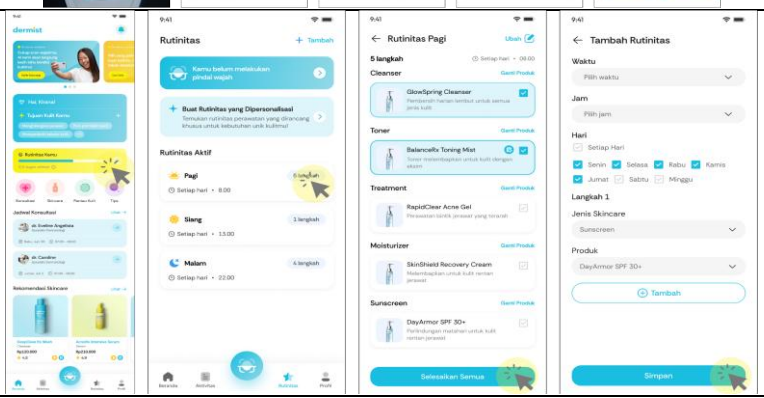
AI-photo scanning with questionnaire as the initial assessment
This feature allows users to upload a photo for skin analysis while filling a questionnaire to gather key data on user's habits and concerns.
The results will guide personalized recommendations.



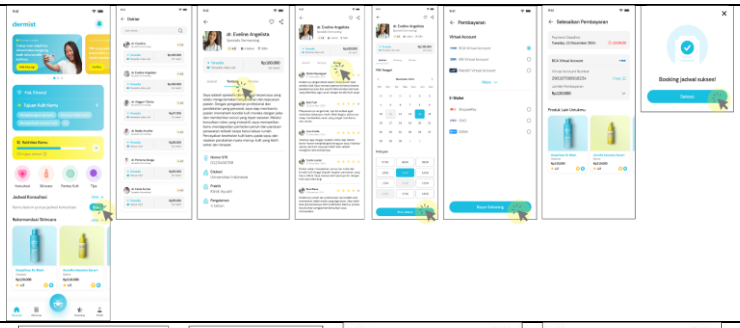
b. Photo scanning feature



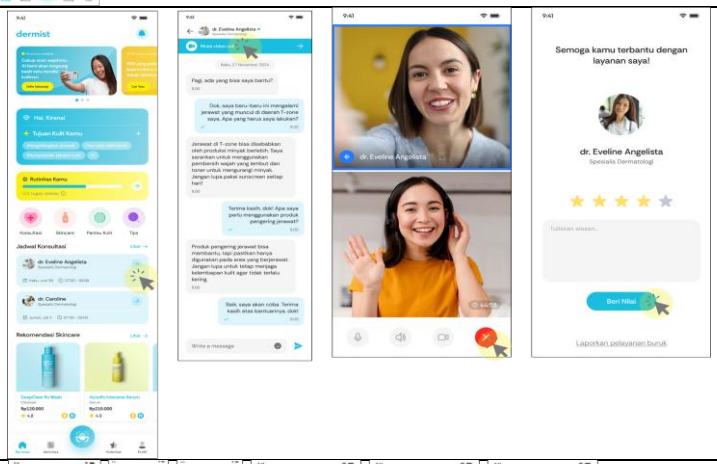
Daily check-ins
The daily check-in module promotes routine adherence by allowing users to log completed tasks, view progress, and stay motivated through personalized reminders.



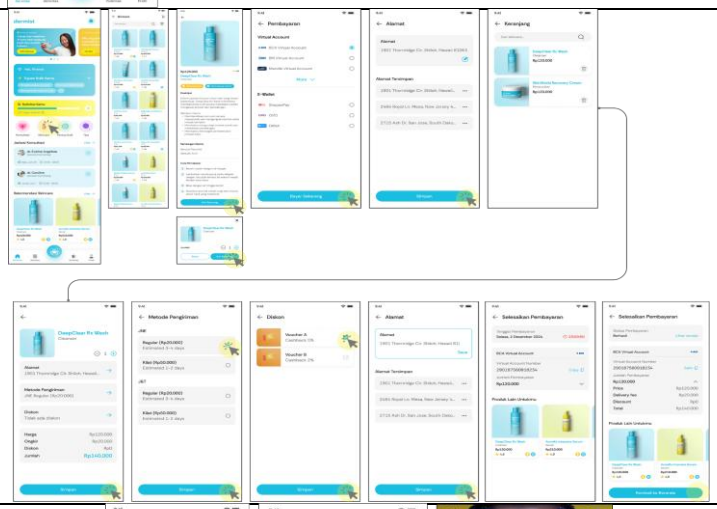
Booking a consultation
This module enables users to schedule consultations with certified dermatologists, ensuring timely and flexible access to expert advice.



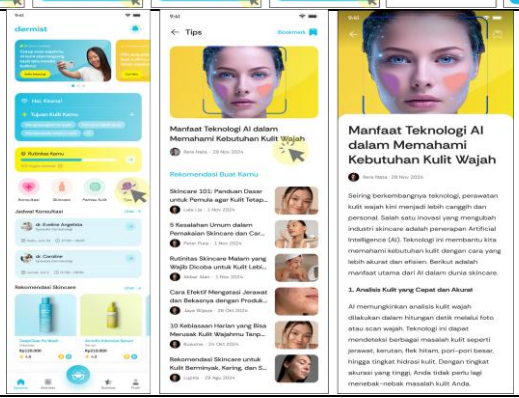
Consultation session
This feature provides real-time communication with dermatologists via chat or video, delivering professional advice tailored to user needs.

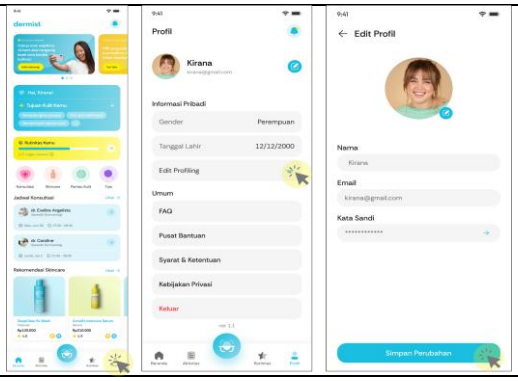


Skincare order
The skincare order module simplifies the purchasing process by integrating an e-commerce feature for dermatologist-recommended products.



Tips
This module offers educational content to help users optimize their skincare routines and understand product benefits.



Account management This module enables users to manage their profile, preferences, and application settings.	

Test

a. In depth interview

In-depth interviews were conducted via Zoom meetings with five respondents in 60–90-minute sessions, exploring their experiences with features of the application, such as AI-photo scanning, daily check-ins, consultation booking, skin care orders, and skin care tips. This phase complemented the usability testing process by identifying detailed user needs and pain points. Overall, respondents provided positive feedbacks on the application's main UX journeys and design system. Additionally, respondents commented negatively on several unclear terms and functionality, as well as repetitions of the reminder feature. Summary of the feedback capture grid of this phase is further elaborated in Table 2.

Table 2. Feedback capture grid of Dermist

Category	Explanation
Positive feedback	- Clean, intuitive UI design for easy navigation. - Photo scanning feature for personalized recommendations. - Daily check-in reminders for consistency. - Options for chat or video consultation gives flexibility. - Educational skincare tips section.
Negative feedback	- Cart functionality unclear, leading to extra clicks. - Misinterpretation of photo scanning instructions. - Daily check-ins became repetitive over time. - Terms like "Skin Goals" were unclear for non-experts.
Possible improvements	- Add onboarding walkthroughs or tooltips for new users. - Improve cart and checkout visibility. - Introduce gamification (e.g., streaks or rewards). - Provide real-time chat during photo scanning. - Add video tutorials and expert advice to the tips section.

b. Usability testing using Maze.co

The usability testing phase involved 30 respondents completing tasks across six distinct blocks within four application modules. This evaluation aimed to assess key metrics of the application's functionality. The overall usability score achieved was 94, with an average misclick rate of less than 10%. Notably, module 2 had the highest misclick rate (13%), suggesting room for improvement in navigation or task clarity. Detailed metrics for each module are presented in Table 3, illustrating the application's strengths in task success rates and overall user satisfaction.

Table 3. Metrics of each application module from Maze.co testing

Metrics	Modules				Average
	1	2	3	4	
Average time (s)	56.5	12.4	21.2	22.6	28.1
Misclick rate (%)	3.4	13.0	10.4	10.2	9.2
Success rate (%)	100	100	100	100	100
Usability score (pts)	91	96	94	95	94

c. *System usability scoring (SUS)*

Ten participants were asked to complete a questionnaire designed to provide comprehensive evaluations of the application's usability. The SUS questionnaire consists of 10 statements, in which five are positive and 5 are negative. Each statement is rated on a 5-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). The purpose of these ratings is to measure the overall usability of the system being evaluated.

Table 4. SUS results and calculation

Question	User 1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10
Q1	4	5	3	4	4	4	5	4	5	4
Q2	2	3	2	3	3	2	3	2	3	3
Q3	4	4	3	4	5	4	4	4	4	5
Q4	2	2	3	2	3	3	3	2	3	2
Q5	4	4	4	4	4	4	5	4	4	4
Q6	2	3	3	2	3	2	2	3	2	3
Q7	4	5	3	4	4	5	4	4	4	4
Q8	2	3	3	2	2	3	3	3	2	3
Q9	5	5	4	5	5	4	5	5	5	4
Q10	2	3	2	3	2	3	3	2	3	2
Total	31	37	30	33	35	34	37	33	35	34
Average	33,9									
SUS Score	**83,75**									

Table 4 summarizes the SUS questionnaire results, with the total score of 83.75 indicating an 'Excellent' level of user satisfaction and usability. This score is based on responses from 10 participants, with an average of 33.90 points per respondent across all questions

CONCLUSION

Use of design thinking methodology in the development of "Dermist" results in a strong user-centric design and functionality across multiple aspects based on the study results, while highlighting areas for future improvement. "Dermist" offers a promising solution for enhancing acne care in Indonesia, paving the way for accessible and effective dermatological services for women.

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