OPEN ACCESS
Indo-JC Indonesia Journal of Computing
ISSN 2460-9056
socj.telkomuniversity.ac.id/indojc

Ind. Journal on Computing
Vol. 9, Issue. 3, December 2024. pp. 208-219
doi:10.34818/indojc.2024.9.3.977

UI/UX Redesign Using User-Centered Design (UCD) Method on Fatsecret Website

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Abstract

Weight loss websites have become a primary source of information for individuals looking to change their diet and achieve a healthy weight by offering a variety of features, content, and UI/UX redesigns to help users achieve their health goals using User-Centered Design (UCD). This study aims to find out trends and characteristics using the Fatsecret Website. FatSecret is a website that has a food calorie counter feature used to calculate the number of calories eaten each day. This research analyzes the improvement of the website's quality in terms of User Interface (UI) and User Experience (UX) by redesigning it using the UCD method. This study aims to produce analysis and design of the UI and UX on the Fatsecret Website. The method used is User-Centered Design, divided into 4 stages. The results of the UI/UX design include solutions to problems found, such as adding a workout feature, redesigning the reminder feature, and placing it outside to make it easier to see. The addition of a workout feature makes it easier for users to lose weight by exercising and managing calories simultaneously. The main colors of the Fatsecret logo, white and green, inspired the prototype's color scheme.

Keywords: UI/UX, UCD, website, health, calorie

Abstrak

Website penurun badan telah menjadi sumber informasi utama bagi individu yang ingin mengubah pola makan dan mencapai berat badan yang sehat, dengan menawarkan beragam fitur, konten dan rancangan ulang *User Interface (UI),* dan *User Experience (UX)*, untuk membantu pengguna mencapai tujuan kesehatan mereka dengan menggunakan *User-Centered Design* (*UCD*). Penelitian ini bertujuan bagi kesehatan mereka untuk mengetahui trend dan karakteristik dengan *Website Fatsecret. FatSecret* adalah sebuah *website* yang hadir terdapat fitur penghitung kalori makanan, digunakan untuk menghitung beberapa kalori yang dimakan setiap harinya. Disini menganalisis untuk meningkatkan kualitas *website* dari segi *UI/UX* dengan melakukan perancangan ulang menggunakan metode UCD, penelitian ini bertujuan untuk menghasilkan analisis dan perancangan UI/UX pada *Website Fatsecret*. Metode yang digunakan adalah *UCD* dibagi menjadi empat tahapan. Hasil perancangan UI/UX antara lain solusi terhadap permasalahan yang ditemukan seperti penambahan fitur *workou*t, desain ulang fitur pengingat, dan penempatan di luar ruangan agar lebih mudah terlihat. Penambahan fitur *workout* yang memudahkan pengguna dalam menurunkan berat badan dengan cara berolahraga dan menurunkan berat badan sekaligus mengatur kalori. Warna utama logo *Fatsecret* putih dan hijau menjadi inspirasi skema warna tampilan *prototype*.

Kata Kunci: UI/UX, *UCD*, *website, kesehatan, kalori*

Received on August, 2024. Accepted on December, 2024

I. Introduction

THE rapid progress of information and telecommunications technology today makes it possible to implement new, more efficient methods in the production sector. [1]. At this time, the development of information technology is growing very rapidly, including in computer networks [2] .This is likely due to the lack of daily activity during lockdowns, as people rarely left their homes and reduced physical activities, leading to irregular eating patterns and weight gain during the pandemic. Throughout the history of mankind, various diseases have appeared that have been classified as pandemics, they cause serious health problems and impacts in various dimensions of social life. According to [3] pandemics have appeared in humanity since humans began to live and organize in groups, a situation that worsened with population growth. Thus, problems such as the plague epidemic of 429 BC that killed Pericles in Athens appeared. The Spanish flu of October 1918, described by De [4] shows that 18 million people died worldwide, greatly affecting the population of various Mexican cities. Mobile applications can support healthy behavior during the pandemic by offering unique benefits such as remote access to health support and engaging in virtual activities (e.g., measuring calories in diet and exercise programs) as a substitute for disrupted face-to-face activities. Fat Secret is a website with a food calorie counter feature that can be used to calculate the calories consumed each day. Fat Secret aims to record the calories in each meal to help users manage their diet better. This study aims to improve the website's quality in terms of UI and UX by redesigning it using the User-Centered Design method, then evaluating the design results using heuristic evaluation and severity ratings.

User-Centered Design (UCD) is an iterative design process that incorporates user needs and preferences as the main focus, allowing designers to create solutions that are not only user-friendly but also meet user desires [5]. In other words, designers should focus on the user and their needs at every stage of the design process. Meanwhile, according to Jokela, User-Centered Design (UCD) is an iterative method for designing the desired interface that meets the needs of the user.[6]. UCD involves several key stages, including designing solutions and evaluating needs, ensuring the design process focuses on understanding the environment where the product will be used, defining what users need from the product, creating appropriate design solutions, and continuously evaluating those solutions to ensure they meet user needs effectively. For the final stage, heuristic evaluation and severity ratings will be implemented to obtain evaluator feedback on whether the website's features need improvement.

User interface design [7], UI aims to enhance the visual aesthetics of a product, making visual elements accessible, integrative, and intuitive for users. Therefore, the importance of graphic designers has considerably [8]. Dharmayanti, Bachtiar, and Wibawa (2018) stated that designing a User Interface (UI) is the design of machines, applications, and other home appliances, through which organizations try to improve and enhance the usability and users of their products or applications [9]. UX should deliver a satisfying experience for users when interacting with the product, such as an application or website. Currently, the features on FatSecret are limited, but user surveys indicate that users expect Gym Work Out features and design changes, making FatSecret a more beneficial and superior application among others. These changes are expected to facilitate weight loss processes in the future and be considered safer and more aligned with health protocols.

The Prototype stage provides a prototype design of the system that will be made based on the discovery of existing ideas [10-13] . The test was carried out by distributing an assessment questionnaire regarding the usability of the prototype to several users who are experienced in the field of material scaffolding management. Usability is the level of a product can be utilized by users to achieve specific goals effectively, efficiently and provide satisfaction [14] . Then, the result was acquired using the System Usability Scale (SUS) method. System Usability Scale (SUS) is a questionnaire to measure the level of usability of a system because it is able to provide a subjective perception of the user [15-16] .

II. Literature Review

A. User Interface (UI)

Graphic design is crucial in the final output of user interface mobile applications (UI for Mobile Apps). With the rapid growth of technology, it is essential to have a specialized graphic designer rather than a programmer who is not experienced in design [17]. User interface refers to the visual display of a product, in this case, software that interacts directly with the user. UI includes colors, typography, icons, illustrations, and layout designed to be as attractive as possible. In short, UI is the visual display of a product observed directly by the user. The importance of user feedback as an indicator of whether the application being developed meets expectations [18]. Several guidelines for designing user-friendly UI include: The aim of a literature review is to show the readers that authors have read, and have a good grasp of, the main published work concerning a particular topic or question in the field. It is very important to note that the review should not be simply a description of what others have published in the form of a set of summaries, but should take the form of a critical discussion, showing insight and an awareness of differing arguments, theories and approaches. It should be a synthesis and analysis of the relevant published work, linked at all times to your own purpose and rationale.

1) Consistency: Consistent elements throughout the user interface.
2) Hierarchy: Structure of elements influencing the order of elements in the application/website.
3) Personality: Branding of an application/website affecting its personality.
4) Layout: Arrangement of elements and layout in the application/website.
5) Typography: Use of font type, size, color, and weight in the UI design.
6) Color: Accuracy of colors applied to the application or website.
7) Imagery: Images, icons, illustrations, and other visual elements providing information.
8) Control & Affordances: Interface elements used by users to interact with the system [3].

B. Types of User Interface

UI is divided into two main categories: Graphical User Interface (GUI) and Text-Based Interface or Command Line Interface (CLI) [19]. GUI uses multimedia elements like images, sound, and video for user interaction, while CLI uses predefined syntax or commands for system interaction [20], there are five types of user interaction:

1) Direct Manipulation: Users interact directly with objects in the interface through actions like dragging, clicking, or dropping objects.
2) Menu Selection: Users select commands from available menus, such as right-clicking and choosing an action from the context menu.
3) Form Fill-In: Users enter data into provided form areas, such as filling out stock control forms.
4) Command Language: Users write predefined commands in the program, such as using commands in operating systems like BIOS, CentOS, or Debian.
5) Natural Language: Users give commands using natural language to achieve desired results, such as typing questions or keywords in a search engine.

C. User Experience (UX)

User Experience (UX) is all aspects related to a user's experience in using a product, how easy it works to understand, how it feels when using the product, and how users achieve their goals through the product [21] . As UX is a Human Computer Interaction (HCI) related concept that is widely applied. It is not only applied in software and hardware development, but also in services, products, processes, society and culture [22] . UX is not related to the internal workings of an application but how the application functions when users interact with it. UX aims to provide the best experience for users when using digital products. Good UX helps users achieve their goals easily. Therefore, UX is a key factor in digital product development as it is closely related to user satisfaction and loyalty. According to Peter Morville, as cited in semantic studies, UX offers seven values to users[23]:

1) Useful: The product must be original and meet user needs well.
2) Usable: The product must be easy to use.
3) Desirable: Attention to brand identity and image, and other design elements that evoke emotion and appreciation from users.
4) Findable: The product must be easy to find both onsite and offsite.
5) Accessible: The product must be accessible to everyone, including those with special needs.
6) Credible: The product must convince users to trust it.

D. User-Centered Design

The classification process aims to carry out the labeling process on test data by carrying out a learning process first [24]. User-Centered Design (UCD) is a design approach that prioritizes user needs throughout the system development lifecycle (SDLC). UCD ensures that applications are developed to meet users' practical and intuitive needs. This approach improves user acceptance and minimizes frustration or difficulty in using the application. The UCD process involves combining investigative elements like surveys and interviews and generative elements like brainstorming to define and understand user needs. UCD is iterative, involving repetition and evaluation at each subsequent stage [25]. The four main stages of UCD include:

1) Understand Context of Use: Understanding the context of system use, including user identity, application goals, and usage situations.
2) Specify User Requirements: Identifying user needs in the business context and defining user goals.
3) Design Solutions: Designing solutions based on identified user requirements, from initial conception to comprehensive final design.
4) Evaluation Against Requirements: Evaluating designs to ensure they meet user needs using heuristic evaluation and severity ratings.

III. Research Method

The UCD process involves UI/UX with a primary focus on user needs and experiences. The UCD method is divided into four stages. Figure 1 shows the UCD process, where the first stage involves understanding and defining user context, followed by specifying user needs, designing products, and evaluating results based on user needs. If the design does not meet user needs, the process must be repeated until the design fulfills user requirements.

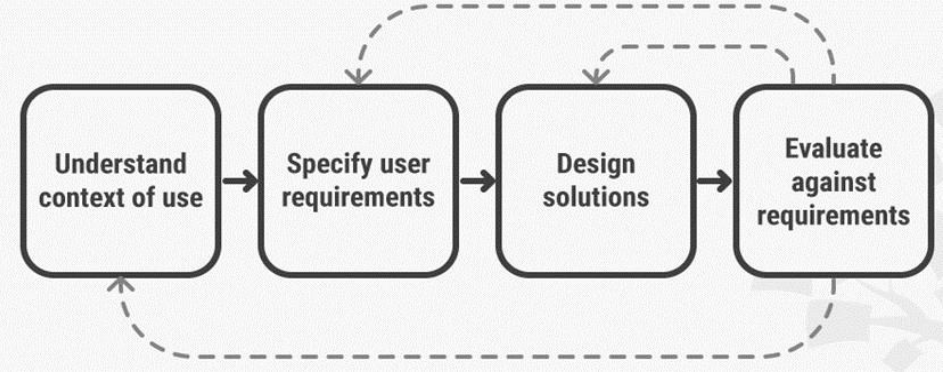


Fig. 1. UCD Process

A. Understanding Context of Use

The main stage in the UCD strategy is understanding the application or website's goals and identifying potential users. The goal is to gain a deep understanding of potential users' needs and preferences. This stage includes:

1) Determining Potential Users: Identifying and defining potential application or website users.
2) Semi-Structured Interviews: Conducting semi-structured interviews with potential users to understand their needs, challenges, and preferences.
3) Creating User Persona: Developing profiles that describe the characteristics, goals, and preferences of identified potential users. User personas help in understanding who the actual users are more personally and specifically.
4) Semi-structured interviews are used to gather data from potential users, using open-ended questions to get opinions and feedback, allowing questions to evolve based on the discussion topic. The interview results are used to design user personas.

B. Specify User Requirements

After completing the first stage and gathering necessary user profiles and data, the next step is to determine user requirements. This includes creating information architecture, user flow, and wireframes. Information architecture involves structuring information systematically to facilitate interface design. After defining the website's information structure, the next step is to determine the system usage flow through user flow. User flow outlines the sequence of steps users take from start to finish to achieve specific goals within the system.

C. Design Solutions

In the final stage, the interface design is tested to identify usability issues using Heuristic Evaluation and severity ratings. Heuristic Evaluation is an approach where evaluators assess interface components based on established heuristic principles. This evaluation aims to determine how well the design meets heuristic criteria. Additionally, Severity Rating is used to assess the severity of identified usability issues. This rating helps to identify the most critical problems that require immediate attention in the interface design. Combining these methods allows developers to identify, prioritize, and design solutions to enhance user experience by reducing or eliminating barriers in interacting with the developed application or website.

IV. Results And Discussion

This section presents the attributes and variations of the research participants, such as gender, age range, educational background, occupation, and the frequency of using and accessing the Fatsecret website. The purpose of this exposition is to provide a comprehensive explanation of the respondents and how these factors relate to the issues and goals of this research. Based on Table 1, the educational background of Fatsecret website users shows that the majority have completed high school, with 79 respondents. Middle school graduates total 21, diploma holders (D3) 8, bachelor's degree (S1) 69, master's degree (S2) 41, and doctoral degree (S3) 1 respondent.

TABLE 1
EDUCATION BACKGROUND OF RESPONDENTS

No	Education Level	Number
1	SMP	21
2	SMA	79
3	D3	8
4	S1	69
5	S2	41
6	S3	1
Total Responden		219

From the data collection and processing of 219 respondents, Table 2 shows that the majority of Fatsecret website users are students, with 104 respondents. Entrepreneurs account for 11, employees 45, government officials 52, housewives 4, retirees 0, and others 2 respondents.

TABLE 2
OCCUPATION AND WEBSITE USAGE SCALE

No	Occupation	Number
1	Student	104
2	Entrepreneur	11
3	Employee	45
4	Government Official	52
5	Housewife	4
6	Retiree	0
7	Others	2
	Total	219

Based on Table 3, the majority of Fatsecret website users use the site occasionally, with 112 respondents (51.1%). Frequent users total 90 (41.1%), and rare users 17 (7.8%).

TABLE 3
WEBSITE USAGE SCALE

No	Usage Scale	Number	Precentage
1	Rarely	17	7.8
2	Occasionally	112	51.1
3	Frequently	90	41.1

A. Understanding Context of Use

Based on user personas, the main goal of users is to lose weight by using the Fatsecret website to manage their diet and control calorie and carbohydrate intake while exercising regularly. However, some features on the Fatsecret website do not meet these goals due to issues affecting user goal achievement. Table 4 presents the identified website issues.

TABLE 4
WEBSITE ISSUES

No	Issue Description	Explanation
1	Desired feature not available	Workout feature is not available
2	Hidden meal reminder feature	Meal reminder feature moved to home page
3	Paid coach feature	Can be split into paid and free for certain schedules

B. Specify User Requirements

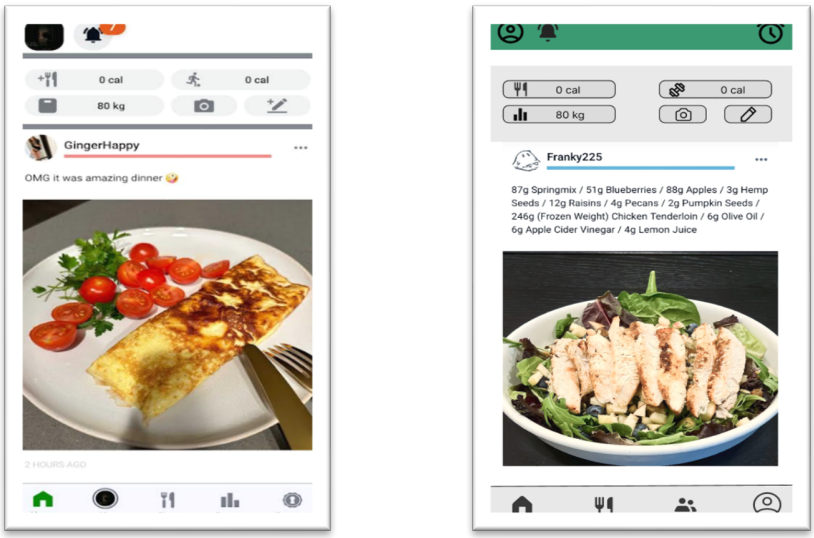
To provide specific user needs based on research methodology and identified issues from user personas, the specific user needs are presented as follows:

TABLE 5
SPECIFIC USER NEEDS

No	Function Name	Specific Before Evaluation	Specific After Evaluation
1	Profile	Displays user data including name, orientation, phone number, email, address, and city/region.	Displays user name, gender, phone number, email, and city or county
2	Reminders	Used for setting timers or alarm times.	Used for setting timers or alarm times.
3	Workout	Fungsi ini tidak tersedia pada *website* sebelumnya.	New system feature helping users lose weight through exercise.
4	Get Free	Not available previously.	Free coach system allowing user communication at specific times.
5	Notifications	Contains information related to missed reminders and paid coach notifications.	Contains information related to notifications from the above functions.

C. *Design Solutions*

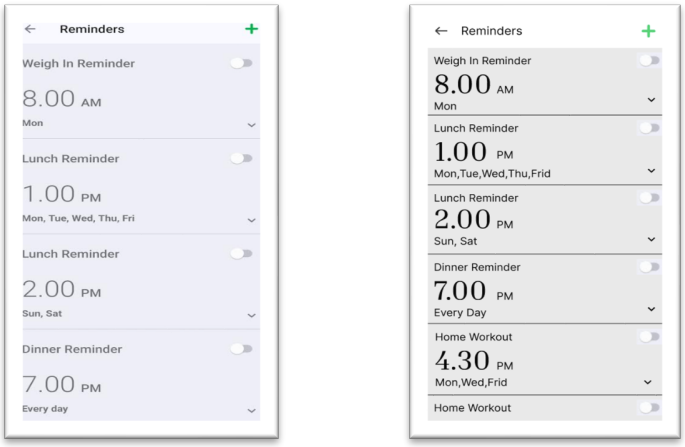
Improvements were made following organized stages in the client-focused design technique. The results of each stage are as follows:



(a) (b)

Fig. 2. Home Feature

The Home feature is divided into two parts. Figure 2 (a) shows the main/home page displaying several people's posts and the total calories and target weight. Figure 2 (b) highlights a new feature at the top right, displaying reminders to help users easily see the set times for reminders amid their busy schedules.



(a) (b)

Fig. 3. Reminder Feature

Reminder feature is divided into two parts. Figure 3 (a) shows the content of the reminders feature where users can set the desired time and day and toggle it on or off. Figure 3 (b) also includes changes to not only remind users of meal times but also scheduled workouts.

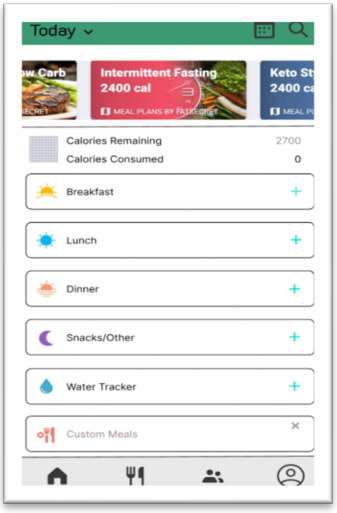


Fig. 4. Home Workout Feature

Figure 4 shows the previously unavailable Home Workout feature. Based on user requests, a workout home page was created where users can select desired workouts and target weight goals.

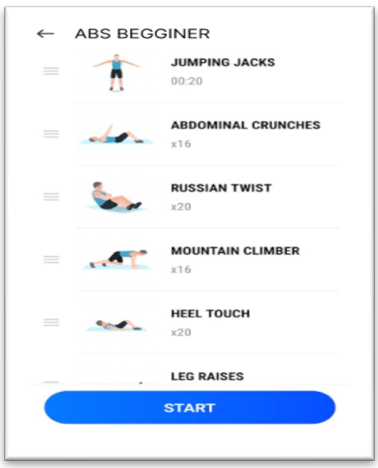
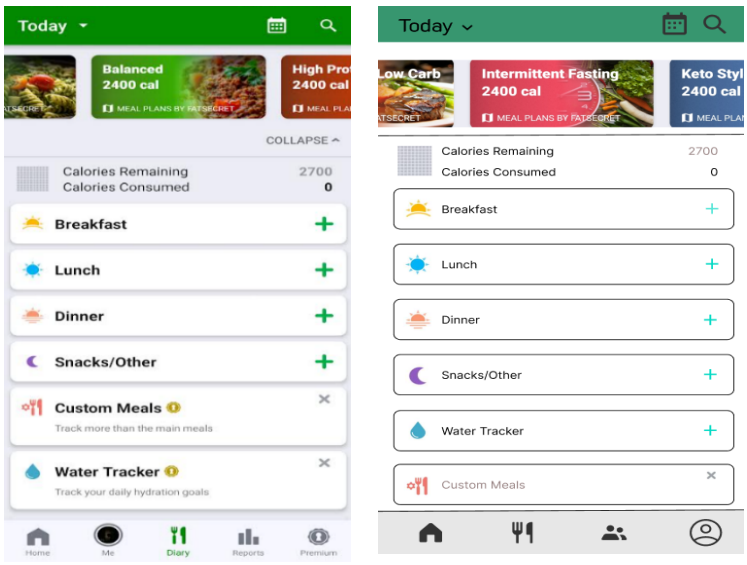


Fig. 5. Training Feature

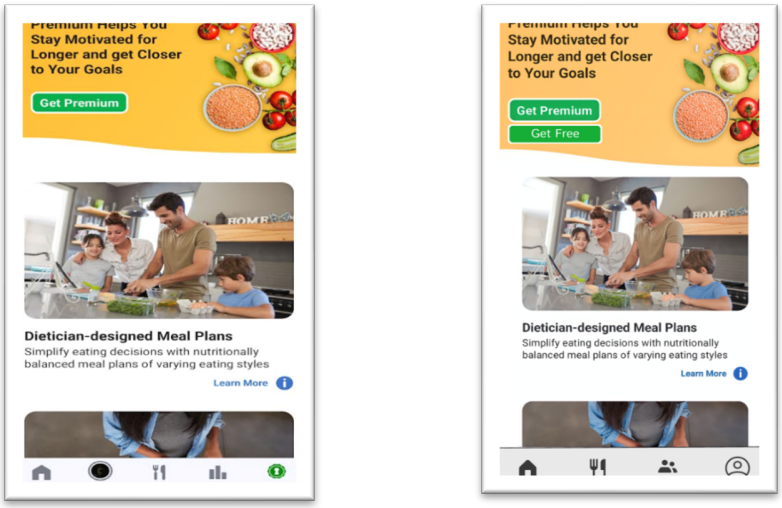
Previously unavailable, Figure 5 shows the new Training feature created based on user requests.



(a) (b)

Fig. 6. Consumed Feature

The Consumed feature is divided into two parts. Figure 6 (a) is part of the profile page, monitoring calorie progression and storing weight images to track progress. Users can provide feedback to Fatsecret. Figure 6 (b) shows minimal changes, except making the water tracker feature free and no longer requiring payment for access.



(a) (b)

Fig. 7. Coach Feature

The Coach feature is divided into two parts. Figure 7 (a) shows the previous coach feature used for faster weight loss through expert consultation. Figure 7 (b) retains the same function but adds a free coach feature for scheduled consultations.

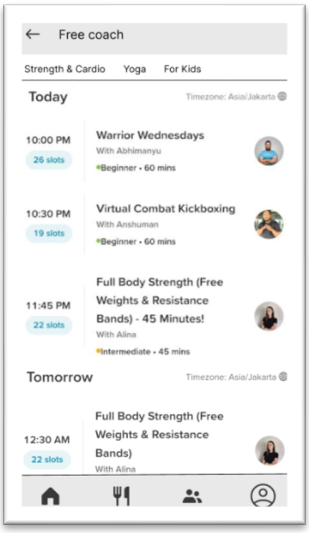
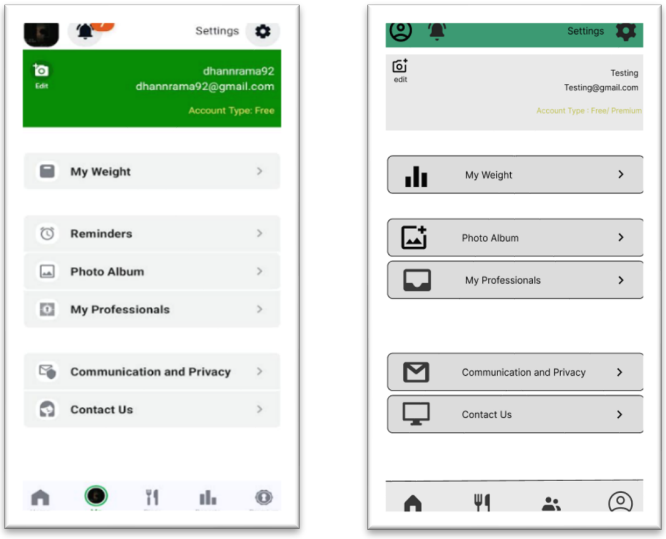


Fig. 8. Free Coach Feature

Figure 8 illustrates the Free Coach feature, offering non-private chat during specific times and waiting for responses.



(a) (b)

Fig. 9. Profile Feature

The Profile feature is divided into two parts. Figure 9 (a) is part of the profile page, monitoring calorie progression and storing weight images to track progress. Feedback can be provided to Fatsecret. Figure 9 (b) shows the reminder feature moved to the home page for easier access and visibility.

V. Conclusion

Based on interviews and questionnaires from IT/EDP and users, this study titled "UI/UX Analysis and Design Using User-Centered Design on the Fatsecret Website" concludes that the UI/UX design solutions addressed identified problems such as adding a workout feature, redesigning the reminder feature, and placing it outside for better visibility. The System Usability Scale (SUS) was used for initial and final design evaluations, in-depth interviews, and user testing. The initial SUS poll rated Fatsecret "Good" with a score of 678, indicating the site's presence should continue. The final evaluation scored the Fatsecret website 843 on the SUS, rating it "Excellent," showing the design met customer requirements.

User personas revealed that users aim to lose weight using the Fatsecret website by managing their diet and exercising regularly. Client needs on the Fatsecret website were assessed using the System Usability Scale (SUS) during the UCD process. The UI/UX configuration was adjusted to meet client needs using UCD techniques. The UI/UX redesign addressed issues such as adding a workout feature to facilitate weight loss through exercise and calorie management. The primary colors of the Fatsecret logo, white and green, inspired the prototype display's color scheme.

Future Works

1) Personalization features. Explore adding more personalized options, such as tailored workout plans and diet suggestions, to enhance user engagement.
2) Mobile Optimization. Further research and development focused on optimizing the mobile version of the website to improve accessibility and usability on smaller screens.
3) User Behavior Analytics. Implement advanced analytics to track user interactions with the new features, providing data for continuous improvement.
4) AI Integration. Investigate the integration of AI to offer smarter, adaptive features, such as predictive meal planning or exercise recommendations based on user habits.
5) Gamification. Consider adding gamification elements to increase user motivation and adherence to health goals.

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