



# A Design Thinking Approach to Redesigning Application X Based on User Reviews

Marhaen Salvatore\* and Gerald Catur Pamuji 

Universitas Komputer Indonesia, Bandung, Indonesia  
\*marhaen.75124012@mahasiswa.unikom.ac.id

**Abstract.** The purpose of this research is to redesign the X application with a primary focus on improving user experience, based on user reviews available on the App Store. The X application is an account-based digital financial service that enables users to independently conduct various transactions via mobile phones, such as paying electricity, water, telephone bills, installments, purchasing credit, money transfers, and e-wallet top-ups. It also supports fast and easy money transfers through the QRIS feature. This study uses the design thinking method, which consists of five stages: empathy, define, ideate, prototype, and test. This approach serves as a structured guide for the redesign process by utilizing publicly available user reviews to identify recurring issues. The collected reviews reveal several problems in application X, including confusing navigation, inconsistent interface elements, irrelevant features, and difficulties in accessing key functions. These findings highlight the importance of aligning application design with user needs. The design thinking approach helps uncover user pain points and supports the creation of improved design solutions for application X. This study also demonstrates that user-centered design thinking can be effectively applied in redesigning digital financial applications by analyzing around 60 user reviews that reflect real user experiences and issues. Overall, this research is expected to become a valuable reference for developers, enabling them to better understand the actual problems faced by users of application X and to make informed decisions in enhancing its design and functionality.

**Keywords:** Design Thinking, Redesign, User Experience, Digital Financial, and User Reviews.

## 1 Introduction

Thanks to rapid technological advancements, companies in the financial services sector as a whole, and the banking sector in particular, are increasingly shifting to value creation through online and digital platforms [1]. The combination of digital technology and the financial sector has created a new model for improving financial literacy [2]. The emergence of various digital financial applications, both web-based and mobile, is one of the developments in information technology that aims to accelerate economic growth [3]. Many people use application X, which aims to provide more convenient,

© The Author(s) 2025

L. Warlina and S. Luckyardi (eds.), *Proceedings of the 8th International Conference on Informatics, Engineering, Science & Technology (INCITEST 2025)*, Advances in Engineering Research 287,  
[https://doi.org/10.2991/978-94-6463-924-7\\_9](https://doi.org/10.2991/978-94-6463-924-7_9)

fast, and easy financial services. As a result of the accessibility of these services, many geographic sectors can increase productivity and economic growth [4, 5]. However, the main problem faced by users when using application X is the inconvenience caused by all the features and services offered. Users often experience various problems with the application, such as features that do not work, unreliable navigation systems, and a somewhat confusing application design.

Therefore, this study aims to redesign application X using design thinking methods, based on publicly available review data on the app store platform. This data is then used as the primary data source in the redesign process of application X. This aims to solve problems experienced by users in the application and produce new design solutions that are more responsive and in accordance with user needs.

Previous research directly related to this study includes research that redesigned the Wastu Mobile application and showed that the research produced a prototype with an average SUS score of A, which was considered acceptable by users [6]. Another study that redesigned the BCA Mobile Banking application was also effective in creating a new design that satisfied customers, met their expectations, and received good comments from them [7]. Furthermore, research that redesigned the e-commerce application also proved to produce a new prototype for the RP2 e-commerce application, which was in accordance with user needs [8]. Furthermore, research on the SH-UPI application resulted in a prototype of the SH-UP application with a significantly improved UI/UX, as evidenced by an increase in the SUS score of 83.625, thus obtaining Grade A or it can be said to be good for users [9]. The latest research that redesigned the PNM Digi Karyawan application also succeeded in producing a new, more effective design solution for existing problems, with a SUS score of 80.5, which means this category is included in Grade B and is acceptable to users [10]. By applying this design thinking approach, we can address all user issues and produce more effective design solutions that meet user needs. This research is expected to serve as a reference for developers of application X to identify the real problems faced by users and simultaneously facilitate the use of application X as a digital financial application.

## **2 Literature Review**

### **2.1 Design Thinking**

Design thinking is an application development method that involves an iterative process in which we seek to understand users, question assumptions, and redefine problems to identify alternative strategies and solutions that may not be immediately apparent from our initial level of understanding. At the same time, design thinking provides a solution-based approach to problem-solving. The following are the stages of design thinking. There are five main stages in design thinking: empathize, define, ideate, prototype, and test [11, 12].



**Fig. 1.** Design thinking stages [13].

Empathy is the first step in design analysis, aiming to clearly understand user needs. This study aims to understand the explicit needs of users. Definition involves gathering information from patient data, which is then analyzed to identify potential problems users may face. Ideation is the process of generating multiple solutions to best present content while addressing multiple issues and perspectives. The prototyping process builds on existing references, particularly previous analysis to determine user preferences, known as prototyping. Testing is the final step in the design process, when users test the prototype to ensure it is user-friendly and compatible [11, 12].

## 2.2 User Interface (UI)

A user interface (UI) is an interactive interface between a user and a computer system that combines design and technical elements to facilitate various device and software interactions. A well-designed user interface (UI) is crucial because it allows users to seamlessly interact with digital elements such as buttons, text, and images. Its primary purpose is to facilitate efficient and effective use of a product or service, contribute to the user experience, and be easily accessible and fully usable. In a digital context, user interface design encourages understanding user needs and the application of principles such as intuitiveness, effectiveness, learnability, and flexibility [14, 15].

## 2.3 User Experience (UX)

User experience encompasses an individual's choices, perspectives, emotions, and feelings, both during and after using an application. Improving an application's functionality, usability, and accessibility is crucial to growing its user base. Analyzing user needs is also crucial for developing more effective user interface designs. When the interface is well-designed, users will have a positive experience when using the product, and when interacting with it, they will feel comfortable and at ease. By improving the product's usability and engagement, user experience (UX) is the secret to higher productivity [15, 16].

## 2.4 Digital Finance

Digital Finance describes the general digitalization of the financial industry, encompassing all electronic products and services related to the financial sector, such as credit cards and chip cards, as well as home banking, electronic exchanges, home trading services, and most recently, automated teller machines (ATMs). This development is

influenced by structural developments. Digital Finance refers to existing financial services, such as map-based banking or insurance, that respond to new developments from FinTech companies. At the same time, this offers new opportunities for market players to provide more convenient and technologically advanced services to their clients. Digital currencies are based on the internet and have a strong technological foundation for society [17, 18].

## 2.5 Figma

Figma is a web-based vector graphics creation and prototyping tool that can be used offline with Windows and macOS desktop applications. Figma's mobile apps for iOS and Android allow users to view and interact with prototypes directly on their mobile devices. Figma's various features are designed for use in user interface and user experience design, with a focus on real-time collaboration. Figma is a popular design tool for creating system or application interfaces for desktop, mobile, and online platforms. Figma is often used by UI/UX designers and other design professionals due to its advantages over other design tool platforms [19].

## 3 Method

This study uses a qualitative method with a Design Thinking approach, which consists of five main stages: Empathy, Definition, Ideation, Prototype, and Testing. This method was chosen in this study. The main data source used for this study is user reviews collected directly from the App Store. Due to the large number of reviews collected, the author only used 60 reviews that explicitly discussed UI and UX issues experienced by users in application X. This data was then aggregated and evaluated to provide a comprehensive picture of the analysis and redesign process.

It begins with the first stage of the design thinking approach, the empathy stage, where the author reads and understands each app user review and identifies various complaints, suggestions, and comments that reflect the user experience. Reviews with similar topics are then grouped into several problem categories [20].

Then, in the define stage, the data collected from the previous stage in the empathy process is evaluated, and various indicators are compiled into a problem statement based on user reviews of application X. The goal is to determine the core problem that will be designed into a design solution for application X [9, 21]. Then, in the ideate stage, the author generates various solution ideas based on the previously formulated problems. The author uses an idea exploration process and initial sketches (low-fidelity wireframes) to develop several alternative interface designs and seeks design inspiration from similar applications [22, 23].

In the next stage, the prototype, the author uses a visual design application like Figma to develop design ideas and implement them in the form of an interface prototype. This prototype includes a redesign of the application's main pages, such as the homepage, transaction menu, and feature navigation. The goal of this stage is to simulate the appearance of the new application design that meets user needs [23, 24]. In the final stage, namely testing, the authors tested the redesigned design to determine whether it met

user needs and solved problems. However, this testing was carried out using a lpha testing [24]. The authors used a thematic analysis approach to analyze the data with the aim of identifying common patterns in user reviews of application X, to produce a thematic framework process that served as the basis for developing user problems and devising design solutions.

## 4 Results and Discussion

This chapter presents the results of an analysis of publicly available user reviews of app X and explains how this data is used at each stage of the Design Thinking method, such as Empathizing, Defining, Ideating, Prototyping, and Testing. These reviews illustrate the real-world challenges users face when using the app.

### 4.1 Data Retrieval

**Table 1.** Table captions should be placed above the tables.

No	Review Content	Rating Star	Time And Date
1	Account verification via old email, email never arrived	1	14 July
2.	It's unclear why the OTP keeps getting wrong even though I've entered it correctly from SMS	1	5 July
3	3 times failed to log in, thought it would reset again the next day, but it didn't	1	27 May
4.	Having trouble logging in, suddenly my account has been blocked, and I've already topped up	1	4 September
5.	The application is slow and the server is often down	1	3 September
6.	Please fix it first, why is the application opening things so slow, I get emotional every time I open it, but I need this application	1	3 September
7.	The application often errors, existing features cannot be run, top up is possible but sending balances to other accounts or e-wallets is not possible	1	4 September
8.	There are many menus, bills and credit purchases but the developer can't use them. Ask them to fix it.	2	9 October
9.	This BUMN application is better, but it needs to be improved. Sometimes it's not recorded in purchasing transactions, so it becomes overthinking.	5	7 February
10.	Oh my, I've created an account but I always fail to log in.	1	4 September

Table 1 shows 10 review samples selected from 60 reviews of app X collected from the app store, which cover user issues within the app. The data includes the content of the review as well as the star rating given and the date the review was published.

## 4.2 Empathize

The empathy stage is the first step in the Design Thinking process, which aims to fully understand user experiences, needs, and challenges. This study conducted a thematic analysis of 60 previously collected and discussed user reviews. These user needs were obtained from reviews of application X, which consisted of several user reviews, but the author only took reviews that discussed UI and UX issues. The review data obtained were Indonesian language reviews. After that, each review was read carefully and then grouped into several categories based on the most common or most frequent topics and problems. Then, the reviews were described into problem categories or problem statements. Table 2 shows that the thematic analysis resulted in five main problem categories.

**Table 2.** Main problem categories.

No	Problem Category	Number of Reviews	Review
1	Verification and OTP issues	20 Reviews	OTP Code Not Sent, Verification Always Fails, OTP Delay Has Expired
2	Failed to Login and Access Account	15 Reviews	I've logged in but suddenly I log out myself, login always fails.
3.	Bugs and App Performance	10 Reviews	The application is very slow and often errors, the server is often down
4	Features Not Working Optimally	9 Reviews	QR can't be taken from gallery, many features but not working
5	Transaction and Mutation Problems	6 Reviews	Already paid but status is unpaid, Mutation not recorded, Transaction Failed

This is the result of empathize from the previous table in table 1. Based on the table above, the most common problems are related to the verification and login process, which is the initial stage in using this application X. Failure at this stage can have a significant impact on the overall user experience and can even cause users to not want to use this application.

## 4.3 Define

After categorizing the problem in the Empathy stage, the next step is to create a problem statement that details the user's needs. This problem statement serves as the basis for

developing solutions in the next stage. Here are three key problem statements that were successfully formulated:

1. Users cannot access features in the application because they encounter difficulties logging in even when using correct data.
2. The verification process often fails because the OTP is not sent or is sent too slowly, causing problems with the registration and login processes.
3. Most of the application's features do not function properly, causing inconvenience to users and eroding their trust in the application.

These statements highlight the key challenges faced by users and serve as the core stage of developing the design solution.

#### 4.4 Ideate

In this ideation stage, the author will develop various innovative solutions to the previously formulated problems, as well as design ideas to improve the user experience. These include:

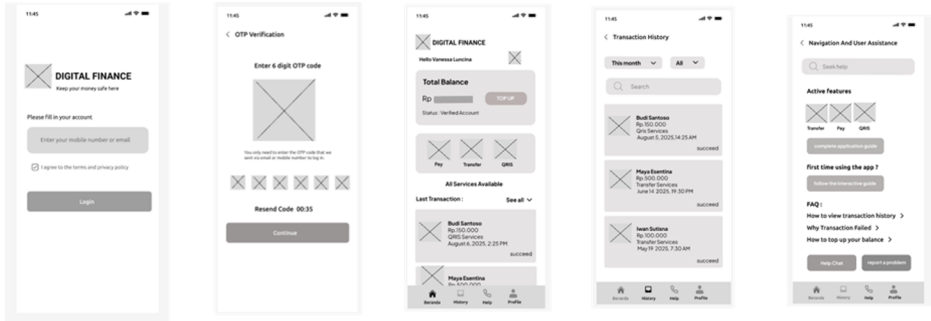
1. Redesigning the login and verification pages to display the OTP delivery status in real time and include informative notifications.
2. Adding system status indicators, such as maintenance or service outage information, to help users understand the application's condition.
3. Simplifying navigation by displaying active features and removing those that are not yet available.
4. Providing interactive guides (walkthroughs) or tooltips about new features to assist users during their first use of the application.

This solution focuses on making the application's functionality clearer, reducing errors, and creating a smoother and more efficient user experience.

#### 4.5 Prototype

Based on the ideas developed, the author then created a prototype of the user interface design using Figma. The redesign process was carried out in stages, starting with the creation of a wireframe as a sketch of the basic structure of the interface, then the selection of color palette colors in the X application design, namely using the typical orange and white colors with a combination of black, these colors were taken according to the DNA or color of the X application which symbolizes the identity of the company. then after the author developed a mockup which would later represent the final appearance with more complete visual elements.

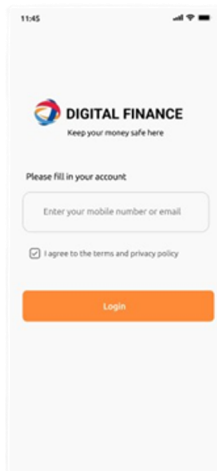
**Wireframe.** This wireframe displays several design pages based on user needs identified in the Empathy and Definition phases. The following image shows the login and OTP verification pages, the dashboard, transaction history, and navigation to assist users. The primary focus of this wireframe is to organize features clearly and concisely, provide easy navigation, and provide easily understandable information for users of the public finance application Fig. 2 below.



**Fig. 2.** Public Digital Finance Application Wireframe.

**Mock-up.** After completing the wireframe or low-fidelity design stage, the next step is to create a high-fidelity design, often called a mockup. This mockup will then be prototyped using Figma. The resulting mockup is shown below.

*Login Page and OTP Verification.* This is a simple login page with OTP verification, making it easier for users to log in to the digital finance application using their mobile phone number and email address (see Fig. 3 and Fig. 4).



**Fig. 3.** Login Page.



Fig. 4. OTP Verification Page.

*Dashboard and Transaction History.* The dashboard has been redesigned to display several active features, such as balance top-ups, payments, transfers, and QR codes. There's also a transaction history page displaying recent transactions (see Fig. 5 and Fig. 6).

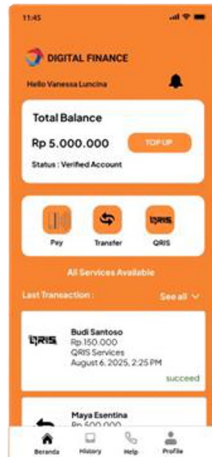
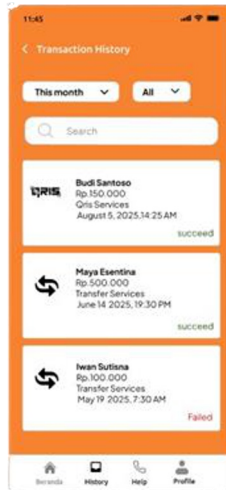
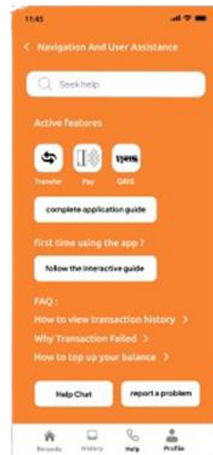


Fig. 5. Dashboard Page.



**Fig. 6.** Transaction History Page.

*Navigation and Help Page.* Navigation and help pages help users troubleshoot issues. The app provides guidance on how to use the digital financial app's features (see Fig. 7).



**Fig. 7.** Navigation and Help Page.

#### 4.6 Test

The final step of the Design Thinking method is the testing phase, which aims to evaluate the suitability of the design to user needs. This study used an internal alpha testing approach because the focus of the research was to test the design concept in the initial stage before being tested directly on users (beta testing). The alpha testing process was carried out by comparing the prototype design results from the Prototype stage with a list of problems and needs discovered in the Empathize stage. These problems came

from an analysis of 60 user reviews conducted on the App Store from January to July 2025. The purpose of this testing was to ensure that the design solution created met user needs and addressed complaints discovered in the initial stage. The following five main redesigned pages were included in the testing scope:

1. Login, this is to determine whether the interface is easier to use and understand.
2. OTP Verification, this is to check whether the verification process and status are clear.
3. Dashboard, this helps ensure important features are easily visible and accessible.
4. Transaction History, this evaluates how clear and organized transaction information is.
5. Help Navigation, this evaluates how easy it is for new users to find guides and help features.

Testing was conducted using a clickable prototype created in Figma. Researchers ran usage scenarios for each page following the normal application flow while checking for readability, information clarity, design consistency, and ease of navigation. The following alpha testing results can be seen in Table 3.

**Table 3.** Alpha testing results.

No	Tested Pages	Problems at the Empathize Stage	Redesign Solution	Alpha Testing Results
1	OTP Verification	Verification and OTP issues	Make OTP code verification easier and real-time with clear message status and the addition of the OTP code resend option.	Easy OTP code verification with clear message status
2	Login	Failed to Login and Access Account	The login form is simplified by entering the user's email or mobile number.	Easy to understand login
3.	Dashboard	Bugs and App Performance	The dashboard is more simplified and intuitive, and displays the main features that work.	Features are visible and easy to use
4	Help Navigation	Features Not Working Optimally	Create user help pages to help users understand features and issues they experience.	Feature and issue help information is clear and easy to understand.
5	Transaction History	Transaction and Mutation Problems	Clear display with complete month filter and transaction status	Transparent transactions and clear status

The results of this test indicate that the prototype design has addressed most of the issues identified in the Empathize stage. Therefore, this prototype is considered suitable for live beta testing in the next development stage. These test results are also consistent with the findings of a journal [25], which explains that the results obtained from a beta testing show improvements in the healthy lifestyle (HLS) application "Surviving & Thriving." This testing was conducted internally by the research team by simulating the user experience (firefighters) to identify potential problems and development errors in the initial version of the application (Minimal Viable Product), or MVP [25].

## 5 Conclusion

This study examines user feedback to demonstrate how well a design thinking approach can be used to redesign a digital financial app. By reviewing 60 App Store reviews of the app, the authors identified several key problem areas related to the transaction process, login, OTP verification, app performance, and non-functional features.

The results indicate that the redesign addressed key issues and improved the app's usability and clarity, despite the research's strong conceptual foundation. The authors were able to understand real-world user needs, identify key issues, and create a more responsive prototype using the Empathize to Test approach. Therefore, this study emphasizes the importance of considering user behavior when designing digital app interfaces, particularly for financial apps used by the public.

This research demonstrates the effectiveness of applying Design Thinking in redesigning a public digital financial application. However, several points can be used for further research or implementation, specifically:

1. Future research can effectively utilize more user reviews from various platforms to improve user satisfaction.
2. Live trials with real participants are needed to validate the results of the redesigned prototype and to more accurately assess usability improvements.
3. Security and privacy aspects need to be examined in more detail as they are crucial components of any cryptocurrency application.
4. The redesign process should also consider accessibility features so that users with diverse needs can use the application without issues.
5. Collaboration with developers and relevant stakeholders will provide practical guidance to improve the implementation of the redesign results in specific contexts.

## References

1. Niemand, T., Rigtering, J.P.C., Kallmünzer, A., Kraus, S., Maalaoui, A.: Digitalization in the financial industry: a contingency approach of entrepreneurial orientation and strategic vision on digitalization. *European Management Journal* **39**(3), 317–326 (2021).
2. Ji, X., Wang, K., Xu, H., Li, M.: Has digital financial inclusion narrowed the urban–rural income gap: the role of entrepreneurship in China. *Sustainability* **13**(15), 1–18 (2021).

3. Wang, Z., Chen, H.: Digital inclusive finance and regional economic resilience: evidence from 279 cities in China. *IEEE Access* **13**, 86438–86457 (2025).
4. Song, Y., Gong, Y., Song, Y.: The impact of digital financial development on the green economy: an analysis based on a volatility perspective. *Journal of Cleaner Production* **434**, 140051 (2024).
5. Meniago, C.: Digital financial inclusion and economic growth: the moderating role of institutions in SADC countries. *International Journal of Financial Studies* **13**(1), 1–19 (2025)
6. Alamsyah, R., Nugroho, I.M., Alam, S.: Redesign user interface dan user experience aplikasi Wastu Mobile menggunakan metode design thinking. *Jurnal Ilmiah Betrik* **13**(2), 152–159 (2022).
7. Abimanyu, S., Sutopo, J.: Redesain user interface aplikasi BCA mobile banking menggunakan metode design thinking. *Jurnal Indonesia: Manajemen Informatika dan Komunikasi* **5**(1), 905–912 (2024).
8. Limantara, N., Renaldi, R., Filicia, C.: Redesign of e-commerce mobile application with design thinking method: a case study of RP2, online household retailer. *ComTech* **12**(2), 89–98 (2021).
9. Fuada, S., Setyowati, E., Restyasari, N., Heong, Y.M., Hasugian, L.P.: UI/UX redesign of SH-UPI app using design thinking framework. *International Journal on Informatics Visualization* **8**(3), 1055–1063 (2024).
10. Fauzansyah, A.: Re-Design UI/UX Aplikasi PNM Digi Karyawan dengan Metode Design Thinking untuk Meningkatkan Kepuasan Pengalaman Pengguna. *Jurnal Vokasi Indonesia* **11**(2), 8 (2024).
11. Zamakhsyari, F., Fatwanto, A.: A Systematic Literature Review of Design Thinking Approach for User Interface Design. *JOIV: International Journal on Informatics Visualization* **7**(4), 2313–2320 (2023).
12. Pande, M., Bharathi, S.V.: Theoretical foundations of design thinking – a constructivism learning approach to design thinking. *Thinking Skills and Creativity* **36**, 100637 (2020).
13. Nasution, W.S.L., Nusa, P.: UI/UX design web-based learning application using design thinking method. *ARRUS Journal of Engineering and Technology* **1**(1), 18–27 (2021).
14. Kim, T.S., Ignacio, M.J., Yu, S., Jin, H., Kim, Y.G.: UI/UX for generative AI: taxonomy, trend, and challenge. *IEEE Access* **12**, 179891–179911 (2024).
15. Hasan, T.I., Silalahi, C.I., Rumagit, R.Y., Pratama, G.D.: UI/UX design impact on e-commerce attracting users. *Procedia Computer Science* **245**, 1075–1082 (2024).
16. Abbas, A.M., Ghauth, K.I., Ting, C.Y.: User experience design using machine learning: a systematic review. *IEEE*, **10**, 51501–51514 (2022).
17. Yang, Y., Liu, S., Li, Y.: Research on the influence mechanism and regional heterogeneity of digital finance on enterprise innovation. In: *Proceedings of the 2021 International Conference on Computer, Blockchain and Financial Development* (2021), pp. 514–518 (2021).
18. Gomber, P., Koch, J.A., Siering, M.: Digital finance and fintech: current research and future research directions. *Journal of Business Economics* **87**(5), 537–580 (2017).
19. Saunders, C., Gordon, M., Righini, C., Pedersen, H.F., Rask, C.U., Burton, C., Frosthalm, L.: Participatory design of bodysymptoms.org: An interactive web resource to explain multisystem functional somatic symptoms. *Journal of Psychosomatic Research* **183**, 111827 (2024).
20. Cankurtaran, P., Beverland, M.B.: Using design thinking to respond to crises: B2B lessons from the 2020 COVID-19 pandemic. *Industrial Marketing Management* **88**, 255–260 (2020).

21. Prasetyo, Y.T., Susanto, K.C., Chuang, K.H., Yin, R.T., Chen, J.W., Zhang, Y.X., Benito, O.P., Belmonte, Z.J.A., Cahigas, M.M.L., Nadlifatin, R., Gumasing, M.J.J.: Factors influencing the perceived usability of Line Pay: An extended technology acceptance model approach. *Acta Psychologica* **255**, 104924 (2025).
22. Subarjah, V.A., Ari Purno Wahyu: Analysis and Design of User Interface and User Experience of Regional Tax Enterprise Resources Planning System with Design Thinking Method. *Inform: Jurnal Ilmiah Bidang Teknologi Informasi dan Komunikasi* **7**(2), 96–106 (2022).
23. Yanfi, Y., Nusantara, P.D.: UI/UX design prototype for mobile community-based course. *Procedia Computer Science* **216**, 431–441 (2023).
24. Yudhanto, Y., Pratisto, E.H., Purnomo, F.A., Hidayat, T.N., Haqimi, N.A., Ardhi, O.D.W.: Design and Development Museum Ticketing System (MTS) with Design Thinking Method. *Procedia Computer Science* **234**, 1212–1219 (2024).
25. Hershey, M.S., Bouziani, E., Chen, X.Y., Lidoriki, I., Hadkhale, K., Huang, Y.C., Filippou, T., López-Gil, J.F., Gribble, A.K., Lan, F.Y., Sotos-Prieto, M., Kales, S.N.: Surviving & Thriving; a healthy lifestyle app for new US firefighters: usability and pilot study protocol. *Frontiers in Endocrinology* **14**, 1250041 (2023).

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

