

# Analysis and Design of UI/UX Mobile Applications for Marketing of UMKM Products Using Design Thinking Method

Eva Zuliana Dewi<sup>1)</sup>, May Fransisca<sup>2)</sup>, Rani Irma Handayani<sup>3)</sup>, F. Lia Dwi Cahyanti<sup>4)</sup>

<sup>1,2,3,4)</sup>Universitas Nusa Mandiri, Indonesia

<sup>1)</sup>[zeva455@gmail.com](mailto:zeva455@gmail.com), <sup>2)</sup>[mayfransisca@gmail.com](mailto:mayfransisca@gmail.com), <sup>3)</sup>[rani.rih@nusamandiri.ac.id](mailto:rani.rih@nusamandiri.ac.id), <sup>4)</sup>[flia.fdc@nusamandiri.ac.id](mailto:flia.fdc@nusamandiri.ac.id)

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**Abstract:** the "Product UMKM Online" website is a marketplace or e-commerce that is used as a medium to facilitate UMKM actors in Indonesia in marketing their products and helping UMKM actors to further increase their product sales and help play an important role in the UMKM business process in Indonesia. however, the author found on the website there are still some shortcomings, so the author researched. this study aims to provide recommendations as reference material in the form of a prototype design so that it can be developed in the future. in this study, the author uses a Design Thinking method approach to be able to produce a UI/UX design that fits the user's needs. There are several processes in the research method that the author uses, namely empathize, define, ideate, prototype, and test. The prototype stage goes through several stages, namely understanding a problem, designing a solution than making a prototype which is then tested on several users. The application of the Design Thinking method in this research is expected to improve the user's experience better than before.

**Keywords:** Design Thinking, Prototype, UI/UX, UMKM, Website

## INTRODUCTION

UMKM (Usaha Mikro, Kecil dan Menengah) now play a very important role for the economy in Indonesia. When the economic crisis hit the world, it automatically worsened the economic conditions in Indonesia. The condition of the economic crisis occurred in the period from 1997 to 1998, only the UMKM sector (Usaha Mikro, Kecil dan Menengah) was able to stand strong. This is evidenced by the Central Statistics Agency which publishes the post-economic crisis situation that the number of UMKM in Indonesia is not decreasing, but is increasing (Putra, 2018). This shows that UMKM have a major role in building the Indonesian economy, although they are not yet supported by adequate information and communication technology. In addition, the outbreak of the Covid-19 virus in Indonesia has become a new problem for UMKM (Usaha Mikro, Kecil dan Menengah). The appeal for physical distancing initiated by the government will definitely reduce personal activities that require physical presence.

The "Online UMKM Products" website is a forum that can be used by UMKM actors throughout Indonesia with their products. However, this media still requires a mobile-based software application design so that it can be easily used by users without having to type in the website url address first and can build interesting interactions and experiences with users. In addition, the design of applications that are developed without paying attention to user needs often have errors. Application products that have some features that are not really needed or even make it difficult for the user lead to an inadequate user experience. The integration of ideas and iterative processes is very important in designing an application. The design of the application that will be made by the author uses the Design Thinking method, which is an innovation-based product design method that relies on finding solutions to problems in certain products in business (Hamdandi et al. 2022). Using the Design Thinking method is considered more competent in solving existing problems, with a prototype made, users can easily use it and the experience provided can produce better results (Haryuda, Asfi, and Fahrudin 2021).

Based on the description of the problems above, it is necessary to develop a UI/UX design for the "UMKM Online" mobile application, which can be used as a medium for UMKM actors and consumers to make buying and selling transactions. In designing the UI/UX design, the author uses the Design Thinking method so that according to the needs of the end user of the application. Design Thinking as a solution to solve the problem of the end user's needs by designing the UI/UX design of the application which will later be tested on the design.

\*name of corresponding author



## LITERATURE REVIEW

To support this research, the author uses several previous studies that have been carried out by several previous researchers, either in the form of Design Thinking methods or UMKM mobile applications. In the research "Designing Android-Based Business Introduction Applications, Usaha Mikro, Kecil dan Menengah" it was concluded that the application was successfully designed using location-based services to introduce UMKM to Banyumas Regency, based on distribution to the community. This application helps the Manpower and Cooperatives Office of Banyumas Regency to implement UMKM in the Banyumas Regency area. This application also makes it easier for people to get information about UMKM in Banyumas Regency. In addition, this application can also provide supporting information such as UMKM data, UMKM locations, and telephone numbers for UMKM actors (Mustabirin, Kartiko, and ... 2021).

In the research entitled "Building an Online Shopping Application for Android-Based Usaha Mikro, Kecil dan Menengah (UMKM) in Pekalongan Regency" explains that the online shopping application for the Android-based Micro Small and Medium Enterprises (UMKM) grocery store in Pekalongan Regency, makes it easier for prospective buyers to shop at grocery stores without having to come to the store first and this application can be used if it is connected to an internet connection (Saefudin, Fatkhudin, and Satrio 2020).

According to Saputra, D. Dkk. in the title of his research "UI/UX Development in Work Applications Using Design Thinking Methods". In this study the authors conclude that Design Thinking is useful in finding solutions to a problem, by rearranging the problem from a human point of view, then adding many ideas during discussion sessions, and conducting trials. Based on feedback at each stage of the Design Thinking method, the author tries to find the advantages and disadvantages and then formulates it in order to get a solution in improving the design of the User Interface. Meanwhile, in the final stage, testing is carried out to find more problems and difficulties in using the application (Jafar, Nadimsyah, and Pribadi 2022).

According to Atnis Kurnia Rianingtyas and Kartika Kusuma Wardani (2018) in their research with the title "Designing a Mobile Application User Interface as a Digital Promotion Media for UMKM Tour and Travel". The conclusion written by the researcher is that the existence of a mobile application User Interface (UI) design can assist users in carrying out the tasks and functions of the application created. The design of a good UI design must be based on user-centered research so that the resulting design can be said to be successful. In the design made, the UI function not only makes it easier for users but also supports the main purpose of making mobile applications, namely introducing the quality of UMKM tour and travel services to users. In addition, the UI design he designed also serves as a visual identity that distinguishes the latest application from applications that have been made before (Rianingtyas and Wardani 2019).

According to Permata Sari, I. Etc. in his research entitled "Implementation of Design Thinking Approach Methods in Making Applications at UPI Cibiru Campus". The author expresses an opinion in his conclusion that the information system facilities for the teaching and learning process at the UPI Cibiru Campus are found to be less good. So the author took the initiative to provide a new solution by designing an application called Happy Class. The results show that 50% of respondents feel interested and 25% of respondents feel very interested. This proves that the Happy Class application can help students and lecturers in carrying out the teaching and learning process and can reduce the possibility of communication errors (Sari et al. 2020).

## METHOD

Based on the problems described in the previous chapter, the form of the research instrument is in accordance with the method used, namely using a questionnaire or questionnaire instrument. The form of the questionnaire used in this research instrument is in the form of an online questionnaire using a google form by asking the respondents a list of questions related to research.

At the research stage, the author uses the Design Thinking method in analyzing and designing Mobile Applications as Marketing for UMKM Products in Indonesia. The following are the stages of the Design Thinking method in developing the application design in this study: While the results of the respondents' answers will be processed according to the principles applied in the research method.



Figure 1 Design Thinking Stage

\*name of corresponding author



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The first stage is Emphasize, the thing that will be discussed in this phase is how to collect data. At the stage of data collection, researchers made observations on the problems of UMKM in Indonesia as well as the advantages and disadvantages of the "Online UMKM Products" website and distributed questionnaires to respondents via google form.

The second stage is Define, at this stage, the author will get information to design the system related features, functions and elements that can solve existing problems.

The third stage, namely Ideate, at this stage is the stage where the determination of solutions to problems that have been obtained in the previous stage. At this stage, the author brainstorms, notes all important ideas and solutions on how the application design will be built to solve user problems.

The fourth stage, namely Prototype, at this stage produces a series of reduced product versions or determines specific features in a product, so that users can explore solutions to problems created in the previous stage.

The fifth stage is Testing, testing the UI/UX design results that have been made so that the final results meet user needs. This stage is the final stage in Design Thinking, at this stage an iterative process is carried out, the results obtained at this stage are used to redefine the problem and inform user understanding, conditions of use, how people think, act, and feel empathy.

## RESULT

### Empathize

In the empathize stage, there are several ways to collect data to find out user needs, one of which is by using questionnaires and interviews.

The next stage is collecting data by means of interviews. This interview was conducted on 4 persons with different characteristics. The results of the persona can be seen in the following image:

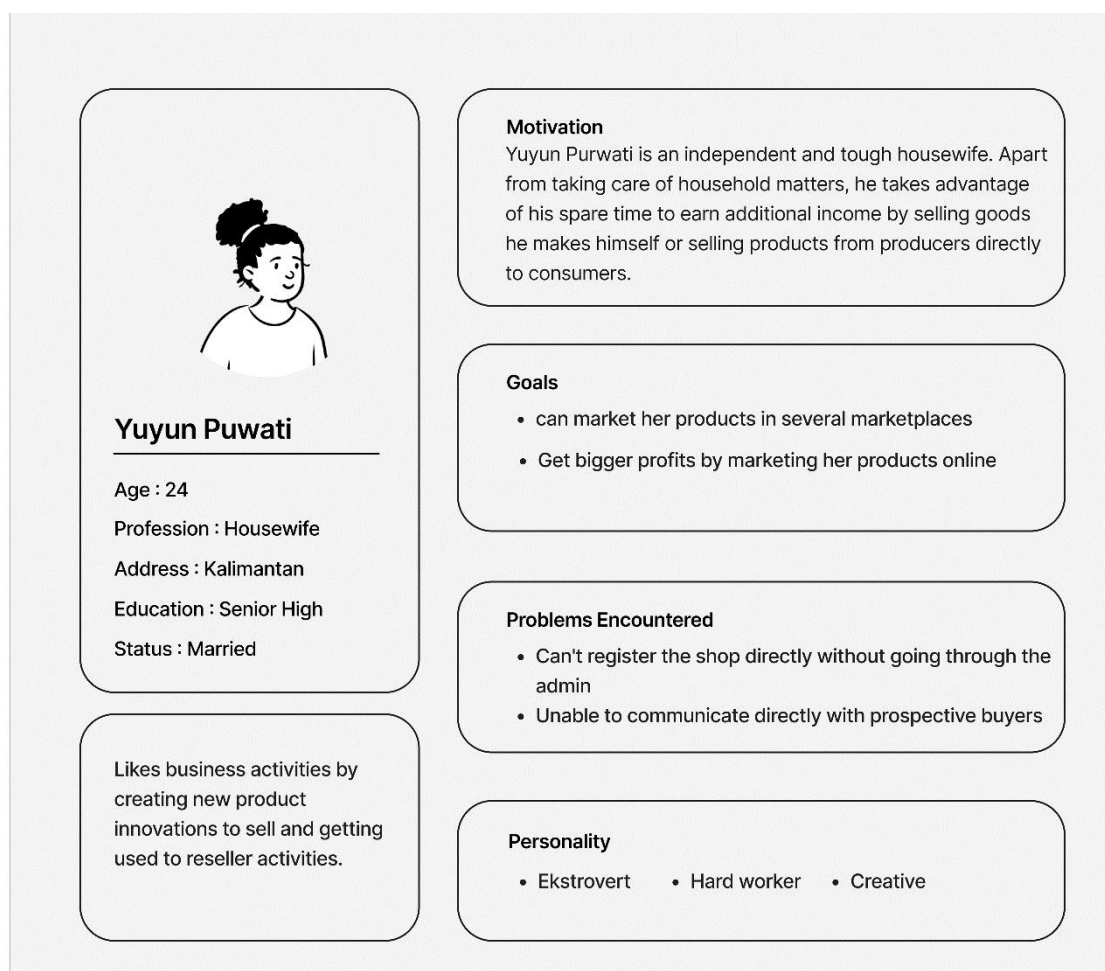


Figure 2 UMKM Actors Persona

The next step is to create an empathy map as a way to understand each user's needs. The following are the results of the empathy map:

\*name of corresponding author

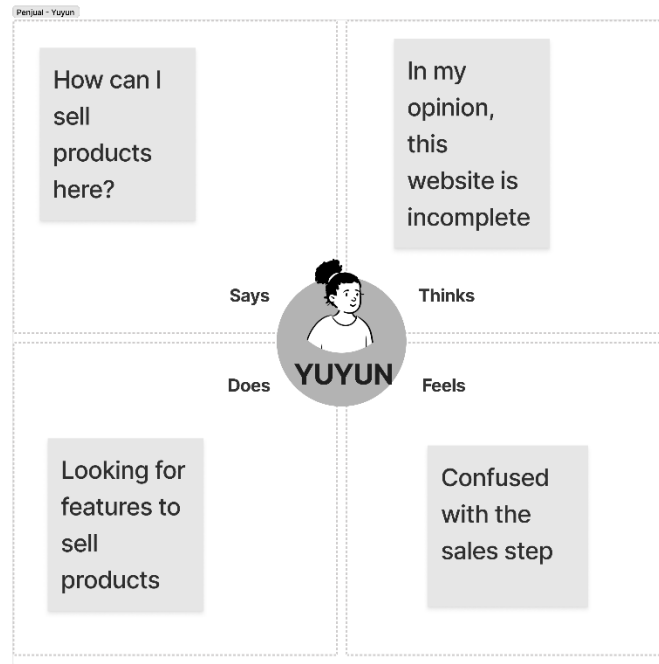


Figure 3 Empathy Map for UMKM Actor

**Define**

At this define stage, the point of view of the problem is determined to direct the designer to an insight and user needs by understanding the user's needs. This insight is obtained from the process of analyzing information at the empathize stage which then the information will be analyzed and evaluated to find out the problems in it. These problems can be in the form of feature problems, user difficulties in carrying out the process of an action on the application, general problems, and so on. The next step is to brainstorm and put it on a list called a list of pain points (problems) and then look for a list of recommendations or problem solving suggestions called How-Might We.

In the next step, the author conducts an in-depth discussion to produce several agreements that become the focus of developing ideas at this ideate stage.

Here are the results of How-Might We that the author got:

- a. Creating authentication features consisting of login and registration
- b. Create customer and seller chat features
- c. Creating an expedition service selection feature accompanied by tracking the position of the goods and estimated time of receipt as well as chat facilities with couriers
- d. Make payment method features more varied

**Idea**

In this 3rd stage it contains ideas that will later be used on the interface of an application by finding solutions to the problems that have been obtained in the previous step. The authors arrange these ideas in a solution idea.

After finishing finding the solution idea, the writer grouped it according to the required criteria into an affinity diagram. After obtaining the affinity diagram, then the author makes a priority division that will be made into prioritization ideas and grouping them into 4 quadrants, namely

Table 1

Priorotization Idea

<b>Quadrant 1 (Do now)</b>	Create authentication (and register) with multiple options
	Creating UMKM registration features
	Features accompanied by automation when UMKM registrants have taken the right steps or not
	Provide categories and tags on each product
	Create a return feature
	Create an item tracking feature and users can contact the courier
	Open the store location feature (to make it easier for users to know where the goods are shipped from)

\*name of corresponding author



	Create a stock feature
<b>Quadrant 2 (Do next)</b>	Create an item tracking feature
	Provide information on estimated goods received
	Make the feature of the choice of expedition services along with the details
	Create a chat feature with the seller
	Equipped with information assistance service features for applications
<b>Quadrant 3 (Later)</b>	Make a choice of languages
	Create a promo information feature
<b>Quadrant 4 (Do last)</b>	Create payment method features
	Make information instructions or usage tutorials so that they are easy to understand
	Create notification view

**4. Prototype**

**a. User Flow**

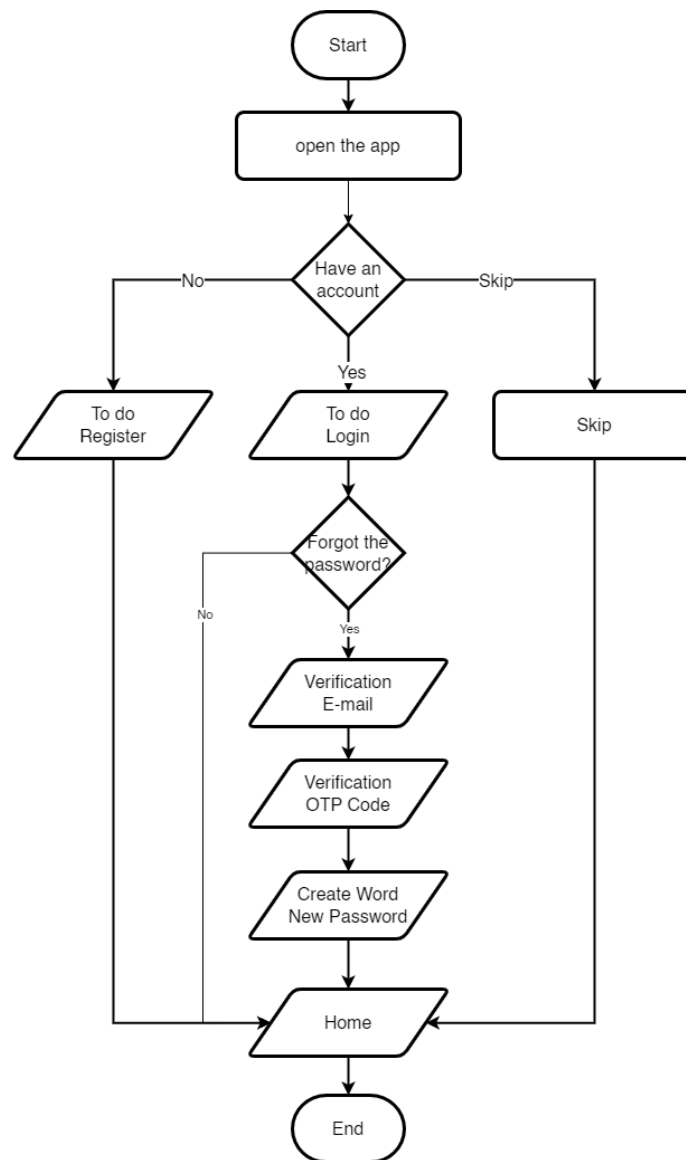


Figure 4 User Flow Authentication

\*name of corresponding author





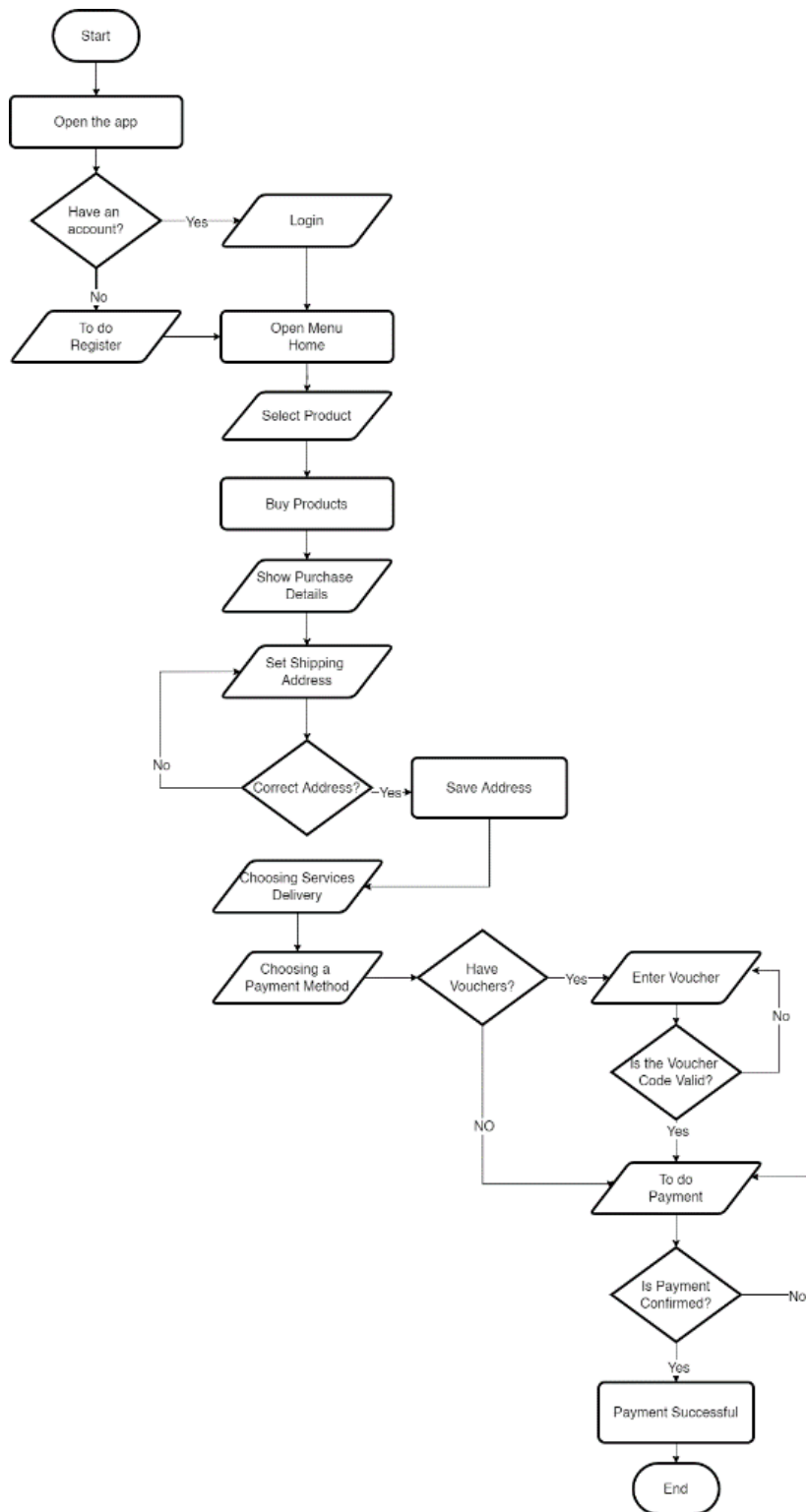


Figure 5 Product Purchase User Flow

\*name of corresponding author



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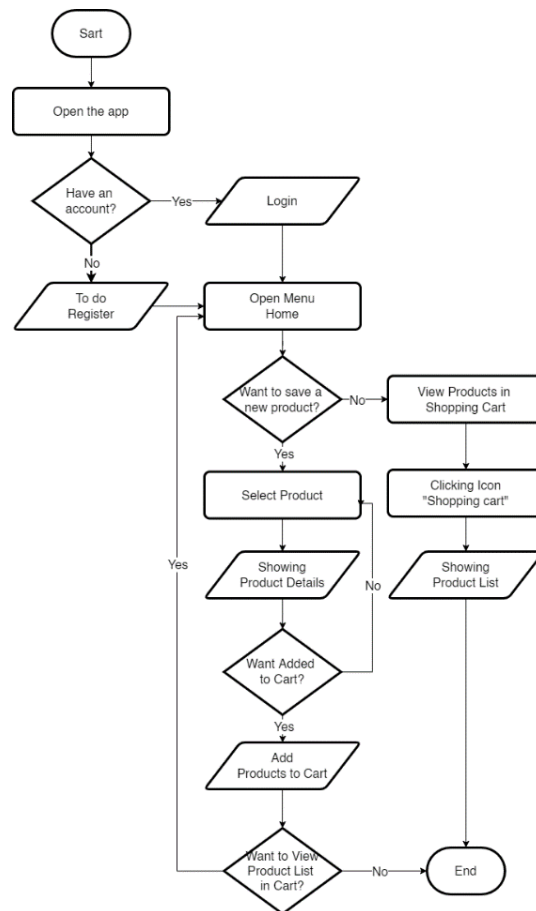


Figure 6 User Flow view and add products to shopping cart

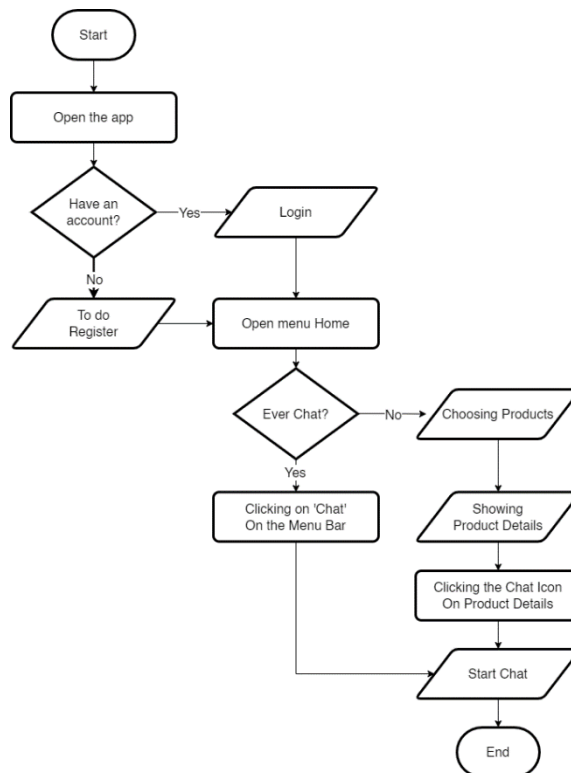


Figure 7 User Flow Chat With Seller

\*name of corresponding author



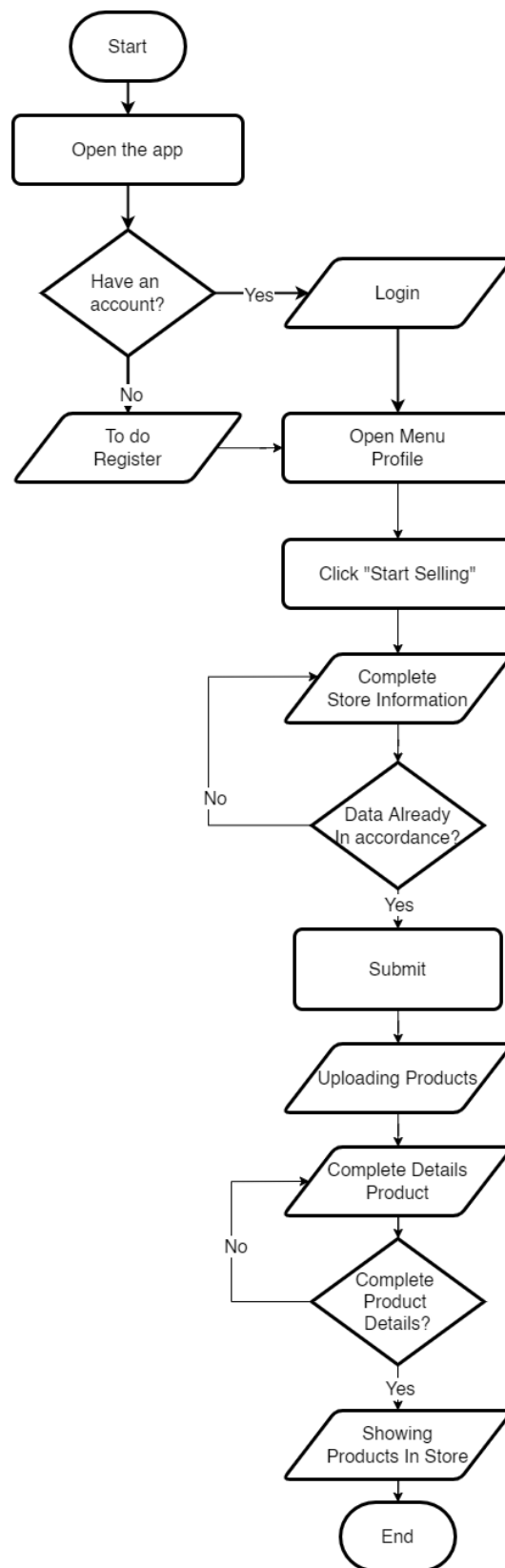


Figure 8 User Flow Sells Products

\*name of corresponding author



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**b. Wireframe**

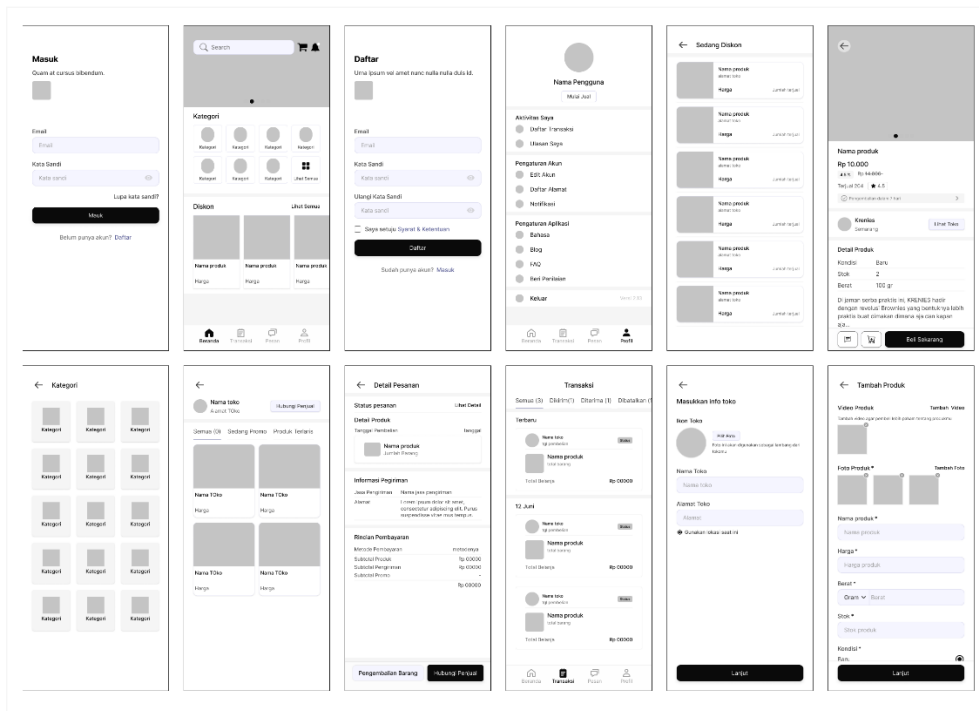


Figure 9 Wireframe

**c. UI Design**

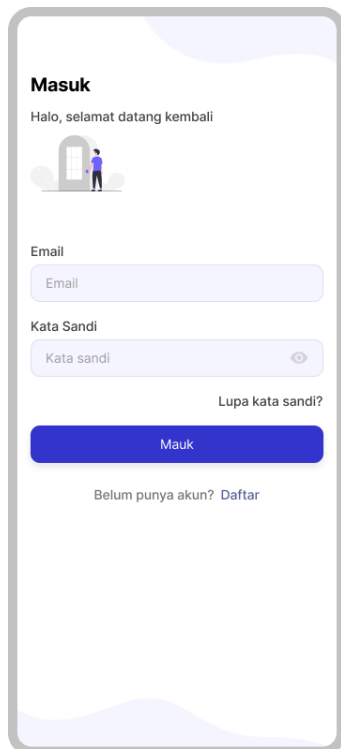


Figure 10 Login

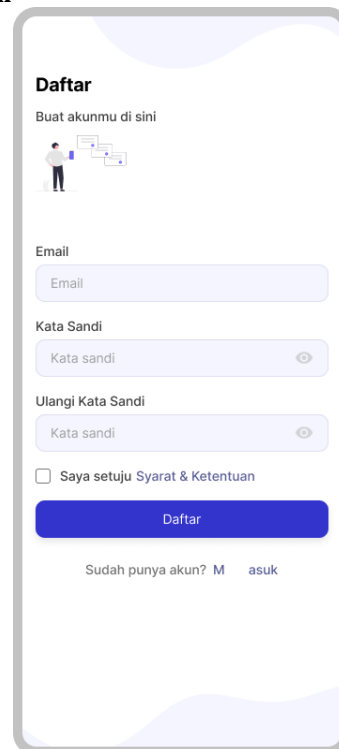


Figure 11 Register

\*name of corresponding author



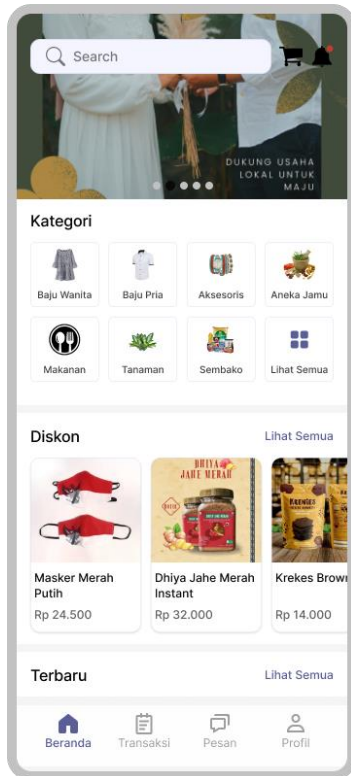


Figure 12 Home Menu

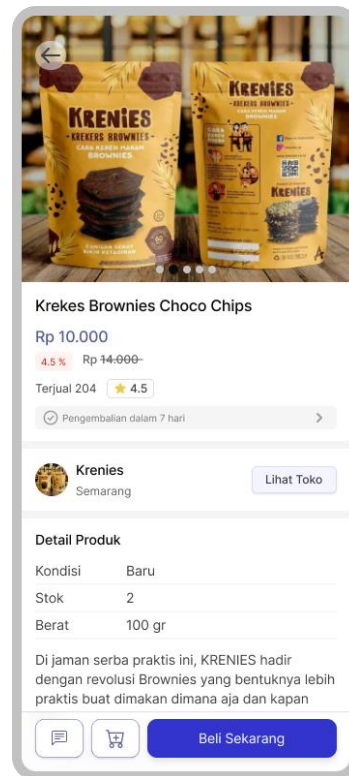


Figure 13 Product Detail

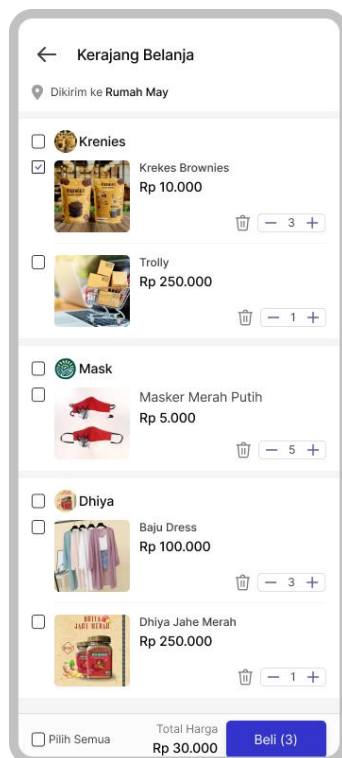


Figure 14 Shopping Cart

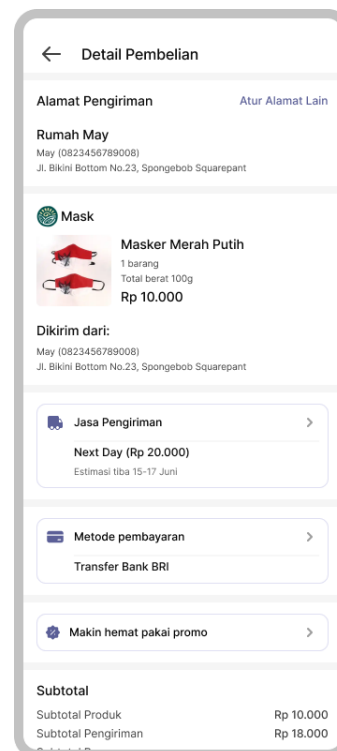


Figure 15 Purchase Details

d. Prototype

The display of the prototype design that the author has made using the Figma software can be accessed via the following link: <https://bit.ly/39tYX9j>

\*name of corresponding author



## 5. Testing

The following is a table of test results scores:

Table 2. Testing

Questions	Average Score
Can find the login form easily	4,5
Can find the product you are looking for easily	4,75
Can find stock items easily	4,65
Can use the chat feature easily	4,65
Can increase/decrease the number of purchases	4,7
Can choose payment method easily	4,8
Can choose delivery services easily	4,6
Can set the address easily	4,6
Can check-out easily	4,6
Can do goods tracking	4,6
Can use the return feature	4,5
Can see a list of transactions that have been done	4,6
Can do account settings	4,8
After logging out, you can log back in easily	4,5
The letters used are easy to read	4,7
The symbols used are easy to understand	4,7
The application of the colors used is comfortable to see	4,6
Can do store registration well	4,8
Can do item reviews easily	4,6
Can find information on estimated time of receipt of goods easily	4,6
<b>Total Score</b>	<b>92,9</b>
<b>Total Average Score</b>	<b>4,6</b>

The questions asked were 20 questions and had been answered by 20 respondents with each answer choice having a score range of 1-5. From each question the writer calculates the average result and then adds it up, which is to get a total score of 92.9 and a total average score of 4.6. From the total average score, it can be concluded that the prototype design that the author made has met the standards of user needs.

## CONCLUSION

Based on the results of the research that has been carried out, several conclusions can be drawn from the UI/UX design of mobile applications for marketing UMKM products, including: the development of the application "Online UMKM Products" using the Design Thinking method can help market UMKM products so that the product can be better known to the wider community. as well as increasing the turnover of UMKM actors. The "Online UMKM Products" application makes it easier for people to be able to find UMKM products on one platform. In this study, the "Online UMKM Products" website has been developed with an output form in the form of a prototype that can be implemented by the developer to become a mobile application in the future.

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\*name of corresponding author

