



Implementation of User Center Design (UCD) in Achieving Design by Focusing on End Users in the Caribi Mobile Application

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Abstract. The industrial revolution 4.0 does not only have an impact on changes in technological culture in the fields of industry, agriculture and animal husbandry also have a significant impact. The application of technology in the field of animal husbandry can assist farmers in maximizing the results of their livestock so that they get a better income and raise the standard of living of farmers. Livestock investment in Indonesia itself has become a culture with management still carried out conventionally, although some of the livestock sales processes have adapted to the use of social media for digital marketing, but not only digital marketing but the investment process needs to be digitized. Based on this, we need a technology that can provide facilities to meet the needs of the community in investing and transactions that are in accordance with the needs of end users, namely investors, breeders and buyers. So it is necessary to design the system developed to suit the needs of the user so that the user does not need to change behavior in using the application. User Centered Design (UCD) is a method in UI/UX design with a focus on user needs. UCD is part of the CARIBI Mobile App investment application software development system which was built to facilitate the digitization of investment and livestock trading transactions. The results of the UI/UX design produce 8 main needs, namely the main dashboard page, investment dashboard, login, livestock dashboard, complaints, reviews, wishlists and transactions. The evaluation carried out at the beginning and at the end uses a usability scale system with an average SUS score of >80% with an excellent rating, which means that the appearance of the CARIBI Mobile App application meets customer needs or is good.

Keywords: CARIBI Mobile Application · Livestock Investment · Marketplace · UI/UX · User Centered Design

1 Introduction

As a country with abundant natural wealth, ranging from the tourism sector, industry, agriculture, livestock, and other sectors. The husbandry aspect, especially currently, makes a big contribution to the local community, especially in growing the economic

opportunities of the local community. Animal husbandry, which is the process of maintaining, caring for, regulating life, marriage, birth and maintaining health as well as the use of cultivated animals with an emphasis on efforts to regulate the breeding of livestock [1] also helps in improving the welfare of all people. Rural economy. Livestock businesses are generally dominated by businesses that are managed traditionally with the use of simple equipment and technology. This is due to limited capital and human resources so that the potential has not been explored optimally [2].

In the era of the industrial revolution 4.0, technology has become its own selling power to survive and develop. Slow in following the flow of world developments can lead to lagging in self-development and the potential of the existing environment. So that with the industrial revolution 4.0, it is expected to be useful in the field of animal husbandry. The development of Indonesian livestock development is a process to realize Indonesia is rich in animal protein and can be more independent in implementing a business, especially in the field of animal husbandry to improve the welfare of the farming community. This refers to one of the government programs in implementing the SDGs (Sustainable Development Goals) sustainable development goals from 2017 to 2045 which says Indonesia will be self-sufficient in animal protein [3].

Utilization of technology as one of the steps in the application of the industrial revolution 4.0, especially in the livestock sector, is now starting to be used optimally and provides opportunities to be used optimally and provides opportunities to increase production and marketing as well as investment in livestock. The trick is to use digital platforms as an effort to expand the existing market and shorten the marketing chain that suppresses selling prices at the farmer level replacing traditional marketing, investment in livestock that can provide benefits for both farmers, buyers, and investors. Digital platforms are currently a form of digitization, including in the marketing field. With the use of digital platforms, it is expected to increase sales to generate greater profits.

CARIBI is an application that was developed to make it easier to make sales and purchase transactions for sheep and investment in sheep that can be accessed and used by anyone. The development of the CARIBI Mobile App is one of the efforts in developing livestock e-commerce to make it easier for mobile users to be able to make transactions anywhere and anytime. However, in the process, adjustments to user needs are needed to produce applications that meet the needs of end users. There are several things that affect the acceptance of an application that is said to be acceptable to the user, one of which is the User Interface (UI) and User Experience (UX) which are very important components because they are concerned with user comfort from the application [4]. The user interface is a process for building an interface design on a system or application that focuses on the appearance of the system [5, 6]. Meanwhile, user experience is how fun an application is and how easy it is for an application to be learned and used by users [7].

User Centered Design (UCD) is a method for designing user interfaces and user experiences by emphasizing that the system aims to serve users, not to use certain technologies and not to be an elegant part of programming. User requirements must dominate the user interface, and user interface requirements must dominate the design of the rest of the system. By using the UCD approach, the process improvement and evaluation framework of the interface is due to its role which places the customer at the

center of system development [8]. UCD is a multidisciplinary design approach based on active user involvement to improve understanding of user needs based on tasks, design iterations and evaluations [9]. UCD is a major component in system development because users are directly involved in system development and users have the right to provide suggestions and inputs that influence system development [10]. Therefore, in this study, the use of UCD will be carried out in analyzing user experience and measuring usability values to obtain information on user needs to produce recommendations for redesigning the CARIBI Mobile App user interface.

2 Methods

2.1 Research Methodology

At this stage will describe the method used in conducting research, namely the application of the UCD method as described in the picture below (Fig. 1).

Define Potential Users Analysis is carried out to determine potential users to understand user characteristics, by involving users in surveys, interviews, and users in making designs. Interviews were conducted with partners in a semi-structured way, some questions were used such as do you know about the marketplace? how often do you transact via marketplace? and others. The results of interviews with 3 participants can be seen in Table 1.

User Persona The user persona is a description of the potential users of the application later. Personas contain profiles of potential users that are used as the basis for display designs or prototypes so that the display matches the user's needs and is easy to use can be seen in Fig. 2.

Pain Point Every service or product is made to facilitate the needs of its users. However, many services or products are unknown to their users. Basically a service or product is created to overcome the pain points that are worried by users. Pain points are problems experienced by users that can be used to build or develop a business brand [11]. After getting the pain points from the results of the interviews, the next step is to group these problems and create what users need and what solutions can be offered. Participants are involved in finding solutions so that solutions appropriate in solving the problems experienced by the participants. Problems, user needs, and solutions can be seen in Table 2.

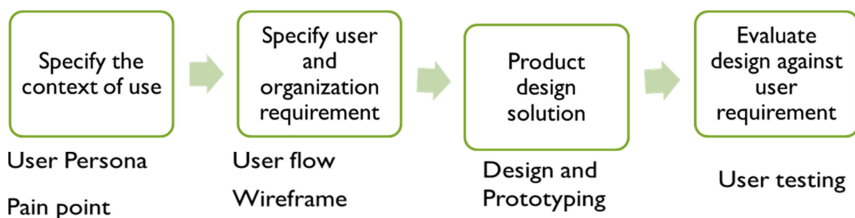


Fig.1. User Centered Design Stages

Table 1. Surface Runoff and Depleted Soil Mass in Different Marble Classes

Question	Participant 1	Participant 2	Participant 3
Do you know anything about marketplaces	Know	Know	Know
How often do you transact via the marketplace?	Ever	Ever	Ever
What goods are you selling or buying?	Clothing, household items	Shoes, bags, and other items	Household items
What benefits can you get from using this platform?	Make transactions faster and don't need to leave the house	Can make transactions anytime and anywhere	No need to leave the house
Disadvantages of the platform you are using at the moment?	Some products sometimes don't match the picture	Some products sometimes don't match the picture	Sometimes the transaction process takes quite a long time

paint points by involving participants in determining solutions by brainstorming with the multilife team and the three participants. The next step is to present the solution that has been designed to the participants, the participants will provide input and suggestions for the solution ideas provided. Solution validation was done face-to-face, text message, and telephone.

User Flow Every service or product is made to facilitate the needs of its users. However, many services or products are unknown to their users. User flow is the user's steps in using a product to solve a problem. In this study, there are several user flows, one of which is the user registration flow, which can be seen in Fig. 3, the second is the user flow of livestock purchase transactions, which can be seen in Fig. 4.

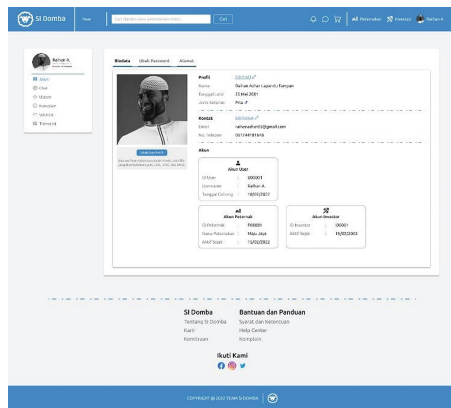


Fig. 2. User Persona

Table 2. Pain Point Solution

Functional	Solution
	Nonfunctional
Interactive dashboard page	users can easily get complete information about animal husbandry, investment, and purchase of livestock
Easy to use Investment dashboard Page	there is a user manual for the investment process
Login page for each type of user	make it easier for users, customers, investors, and breeders to log in
Easy to use livestock dashboard	there is a price negotiation menu, animal information, profit sharing percentage and MOU
Complaints page to discuss with seller or investor	Chat menu for complaints and refund
Reviews page to provide feedback	With star-based rating
Easy to use Wishlists page	Wishlist menu
Interactive and easy to use Transactions page	equipped with prices, negotiation process menus, to information on the delivery process

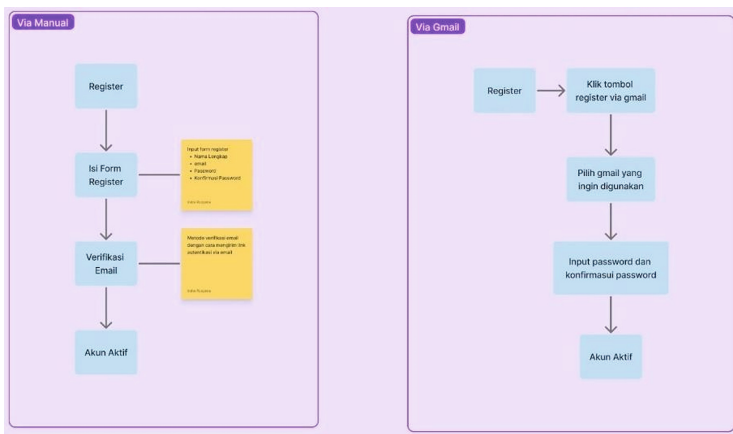


Fig. 3. User Flow Registration User

The user registration process can be done in two ways, namely manually by filling out the registration for and selecting the email verification method by clicking the authentication link via email until the account is active and usable. While registration via Gmail users only need to press the registration button via Gmail, then the user selects

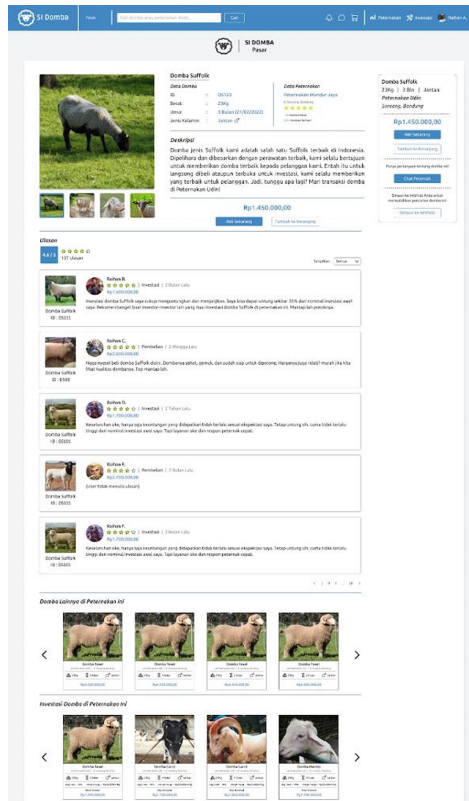


Fig. 6. WireFrame description of the livestock to be purchased

3 Results and Discussion

Based on the design of the user interface and user experience on the Caribi mobile application that has been carried out using the user centered design (UCD) method and has been validated using cognitive walkthrough testing on the prototype that has been made. Then we get the interface of the Caribi Mobile application. Testing with the Cognitive Walkthrough method was completed in the first iteration because the three participants were satisfied with the interface design of the Authentic application. Assessment points regarding testing such as the testing time for each scenario of no more than 30 s and errors experienced by participants in using the design are minor mistakes with an error percentage of not more than 50%. In terms of facial mimics and body gestures of participants during and after using the application, they did not show a sense of confusion. So that the display design can be continued to the next stage, namely the implementation stage.

3.1 User Interface

The following is the design of the caribi mobile application interface using Figma tools, including the dashboard page shown in Fig. 7 a and the Purchase Market page shown in Fig. 7 b.

3.2 Cognitive Walkthrough Testing

Tests were carried out on 3 participants who had joined since the beginning of this study. Testing using a smartphone to run the prototype. Participants in this study are used as a reference for designing user interfaces and user experiences because participants are a description of potential users of the Authentic application later. In the test there are eight scenarios that must be run by the participants. The three participants were not taught to use the previous prototype so that the results were maximized. Participants are declared successful if they complete the scenario in less than or equal to thirty seconds and the error in performing the scenario is less than or equal to three times the error. In each scenario the minimum error limit is 50%, if more than that, the UI/UX display design will be revised. The following is the scenario and flow of the prototype being tested.

The prototype flow that must be done is to press the enter button in the upper right corner and then you will be directed to the register page, on the register page the user

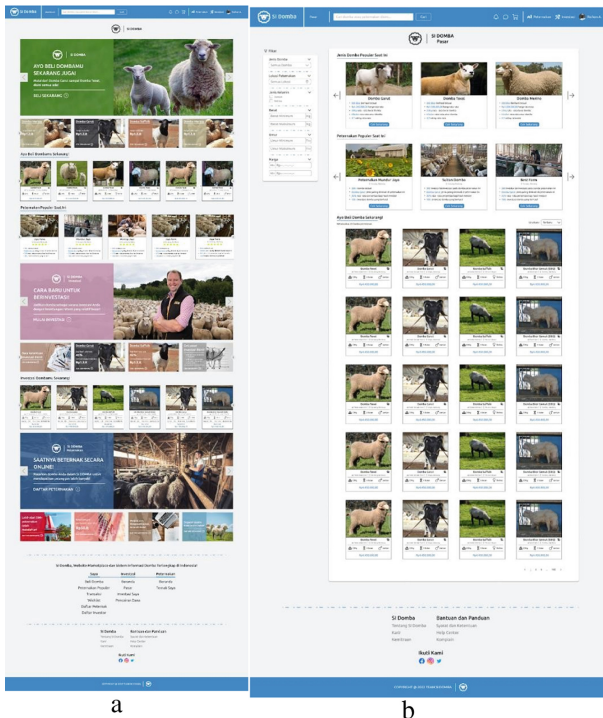


Fig. 7. a. Dashboard Page. b. Purchase Market Page

Table 3. Register and Login Scenario

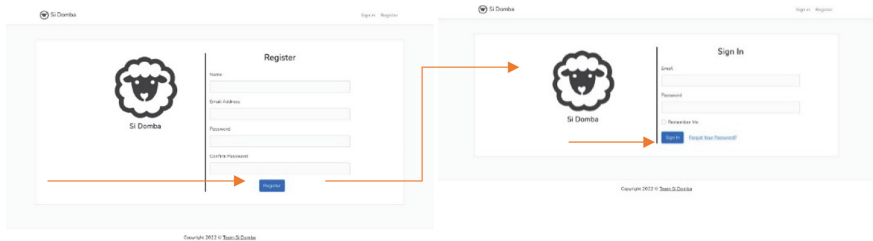
Goals	Register and Login as a customer
Scenario	You are a customer; you want to find livestock according to your budget and needs. Previously you have never registered as a customer. So, you must register, after your registration Login to be able to enter the CARIBI application open the app and create a new account then Login.

fills out the form provided, after being registered as a user the next step is to login. Participants can directly log in by pressing the sign in button can be seen in Fig. 8.

The result of the test using the first scenario is that it is easy for participants to create a new account and successfully login. The following results from testing using the first scenario can be seen in Table 3.

The scenario of choosing livestock and adding them to the shopping cart on the purchasing market page, Participants are asked to choose the livestock to be purchased according to their budget and product description then enter them into the shopping cart and make payment transactions for the livestock based on Tables 4 and 5.

The prototype flow that must be done by the participants in the second scenario is to select livestock according to the required criteria. After getting the livestock that the user is looking for, they are directed to the description page of the livestock to be purchased and press the buy now button so that it will automatically enter the shopping cart. After

**Fig. 8.** Prototype Registration and Login as User**Table 4.** Scenario 1 Test Results

Partisipan	Register as a user	Login	Time (Seconds)	Error
1	✓	✓	5	0
2	✓	✓	9	0
3	✓	✓	4	0
Number of Successful Participants	3	3	Average: 6 s	Error Percentage: 0%
Success Percentage:	100%	100%		

Table 5. Livestock and Payment Transaction

Goals	Can find items to buy and can make payment transactions
Scenario	After you have successfully logged in, you select livestock that match the desired criteria and are added to the shopping cart which will then process the purchase transaction.

being added to the shopping cart the user can see the total payment which can press the pay button to make a payment transaction and then be directed to the payment page and can choose the payment method and payment method. After completing the payment, the user uploads proof of payment to be verified by the admin, if it has been verified, the livestock is ready to be sent to the user’s address. Prototype flow can be seen in Fig. 9

The result of testing using the second scenario is that the participants succeeded in achieving the desired goals. The following results from testing using the second scenario can be seen in Table 6.

In the second scenario test, there is an error by user 2 in making a payment transaction, there is an error in determining the payment method and uploading the proof of the transaction. Errors that occur are minor so there is no need to make design changes.

Testing by applying the cognitive walkthrough method was carried out until the first iteration because the three participants were satisfied with the results of the caribi mobile application interface design. As for the errors experienced by users, they are only minor errors so that no changes are needed and the display design can be continued to the next stage, namely the implementation stage.

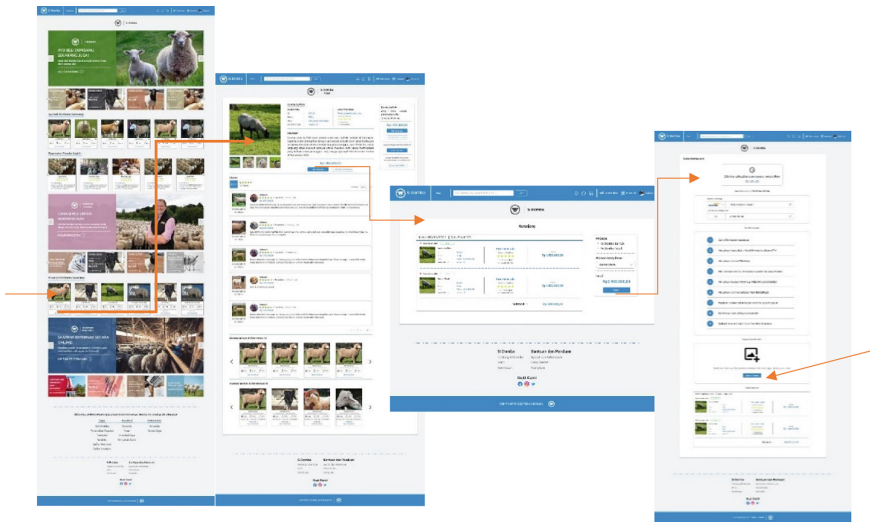


Fig. 9. Prototype Livestock and Payment Transaction

Table 6. Scenario 2 Test Results

Testing Indicator					
Partisipan	Looking for livestock for sale	add to cart and view total paid	Payment Transaction	Time (second)	Error
1	✓	✓	✓	26	0
2	✓	✓	✓	29	1
3	✓	✓	✓	21	0
Number of Successful Participants	3	3	3	Average:25.3 s	Error Percentage: 30%
Success Percentage:	100%	100%	100%		

4 Conclusion

User Centered Design (UCD) is a method in UI/UX design with a focus on user needs. UCD is part of the CARIBI Mobile App investment application software development system which was built to facilitate the digitization of investment and livestock trading transactions. The results of the UI/UX design produce 8 main needs, namely the main dashboard page, investment dashboard, login, livestock dashboard, complaints, reviews, wishlists and transactions. The evaluation carried out at the beginning and at the end uses a usability scale system and Cognitive Walkthrough method with an average score of >85% with an excellent rating, which means that the appearance of the CARIBI Mobile App application meets customer needs or is good.

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