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UI/UX Design of a Website Based Application for Rice Harvest Collectors in Kotanegara Village Design Thinking Method

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ABSTRACT

Kotanegara Village is located in East Ogan Komering Ulu (OKU) Regency, South Sumatra, and the majority of its residents make a living as farmers, especially rice. This village has abundant natural potential, but faces challenges in accessibility, infrastructure, and fluctuations in the price of agricultural products. Village communities implement a culture of mutual cooperation and still depend on the agricultural sector for their livelihood. problems faced by farmers in Kotanegara Village in promoting rice crops, especially due to the lack of access to effective promotional media. Most farmers still use conventional methods. The researcher aims to create a Website-Based UI/UX Application Design for Rice Crop Collectors in Kotanegara Village with the Design Thinking Method" aims to provide innovative solutions that focus on user needs. Through the Design Thinking method, this study succeeded in designing an application prototype designed to make it easier for collectors to manage crop yields, access market price information, and improve coordination with farmers. The results of this study show that the application of website-based technology can support work efficiency, transparency, and better data management.

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1. Introduction

Technology has changed the way we live, work, and interact with the world around us[1]. From increasingly sophisticated mobile devices to artificial intelligence systems capable of performing complex tasks, technology has opened up new possibilities that were previously unimaginable. However, while it provides many benefits, technology also brings challenges, such as the digital divide, privacy concerns, and the potential for data misuse. Therefore, it is important to adopt technology wisely by paying attention to the social, economic, and cultural impacts it causes.

As technology evolves, we must always innovate and adapt in order to maximize its positive potential while reducing the risks that may arise[2]. More and more sectors are turning to digital platforms to increase efficiency and effectiveness. In the context of agriculture, technology can play a very important role, especially in terms of marketing agricultural products and managing transactions between farmers and collectors. Therefore, the use of information technology in the form of web-based applications for rice harvest collectors can be a very appropriate solution to overcome various existing problems.

The development of website technology has undergone a very significant transformation since its

inception. In the early 1990s, websites were first introduced by Tim Berners-Lee, a British computer scientist, who created the *World Wide Web* (WWW)[3]. Websites have become an integral part of modern human life, providing unlimited access to information and services. In the field of education, websites allow learners and students to access learning materials, tutorials, and online courses from all over the world, opening up learning opportunities without time and place limitations. In the field of health, the website facilitates *Telemedicine*, remote medical consultations, and more efficient management of health data, allowing patients to get medical services without having to visit the hospital in person. In the business world, websites are the main platform for companies to communicate with customers, market products, and facilitate online buying and selling transactions. Websites also allow individuals to connect in online communities, share knowledge, and expand their social and professional networks. In the field of government, websites provide public services digitally, making it easier for people to access information related to administration, licensing, and other social services[4].

The use of village websites has an important role in increasing transparency, efficiency, and community welfare. Websites can be information centers, providing current news, announcements, and public services such as village activity schedules or administrative procedures[5]. In addition, the website promotes the potential of the village, such as agricultural products and handicrafts, through a marketplace feature that expands market access. The website also encourages public participation by providing a space for input or complaints, as well as making it easier to pay online for levies or contributions. In terms of transparency, village financial reports can be accessed directly to prevent misuse of funds. Population data management becomes more efficient with database integration, while access to educational or training information can support the younger generation[6].

The village website also helps collaborate with external parties, encouraging modern village development. In addition, the website also functions as a medium to promote the potential of the village, such as agricultural products, handicrafts, or tourist attractions, which can attract the attention of buyers or tourists from outside the area. With the marketplace feature, local products can be sold directly through the website, providing wider marketing opportunities for the public. With good management, the village website becomes a strategic tool to improve services, accelerate development, and realize an advanced and independent village in the digital era[7].

Kotanegara Village is located in East Ogan Komering Ulu (OKU) Regency, South Sumatra, and the majority of its residents make a living as farmers, especially rice. This village has abundant natural potential, but faces challenges in accessibility, infrastructure, and fluctuations in the price of agricultural products. Village communities implement a culture of mutual cooperation and still depend on the agricultural sector for their livelihood. While there are empowerment programs to improve the skills and capacity of human resources, the biggest challenge is to increase digital literacy among farmers. The village government is trying to develop basic infrastructure, such as roads and educational facilities, but it still needs more attention. The use of technology, such as web-based information systems, can help improve the welfare of the community and improve the agricultural sector in this village.

In general, the rice crop management process in Kotanegara Village is not well structured and is prone to various problems. The problems faced by farmers in Kotanegara Village in promoting rice harvest are mainly due to the lack of access to effective promotional media. Most farmers still use conventional methods, such as selling directly to middlemen or at local markets, which limit their reach to potential buyers outside the region. Ignorance of modern marketing strategies, such as attractive packaging or product branding, also makes their rice less competitive than products from other regions. In addition, the lack of digital platforms to promote crop yields results in the potential of the wider market being untaught. The combination of limited knowledge, promotional means, and technological support makes it difficult for farmers to maximize the selling value of their crops[8].

To overcome the problem of rice crop promotion in Kotanegara Village, it can be realized through designing a web-based application with an intuitive, user-friendly, and responsive UI/UX design. This application will be a special marketplace platform for rice crops, allowing collectors to easily upload crop data such as photos, quality descriptions, and prices, and promote them to buyers in local and foreign markets. The integration of automated promotional features into social media, up-to-date market price information, and price trend charts provides collectors with transparency and insights to set competitive prices. The system also supports direct communication between collectors and buyers through the chat feature, speeding up the negotiation and processing of orders. With structured order management, visual sales reports, and online payment options, the app not only improves marketing efficiency but also expands the distribution network of the crop. In addition, the responsive design for mobile devices ensures easy accessibility for users in the village, allowing them to manage the marketing of their crops in a more modern and sustainable way[9].

With a Design Thinking method approach, "Website-Based Application UI/UX Design for Rice

Crop Collectors in Kotanegara Village" aims to provide innovative solutions centered on user needs. This process involves a deep understanding of the challenges faced by collectors, such as inefficient communication, suboptimal price transparency, and manual management of crop yield data. Through this application, it is hoped that a system will be created that is able to improve work efficiency, improve the flow of crop distribution, and support the transformation of the agricultural ecosystem to be more modern and technology-based in Kotanegara Village.

2. Research Methods

2.1 Research Methods

Design Thinking is a problem-solving method that focuses on human needs, aiming to create innovative solutions that suit the needs of users. This approach uses an iterative process that includes five main stages: Empathize, Define, Ideate, Prototype, and Test. Each stage is designed to help designers understand users deeply, formulate problems more clearly, generate creative ideas, and develop and test solutions that can be continuously improved.

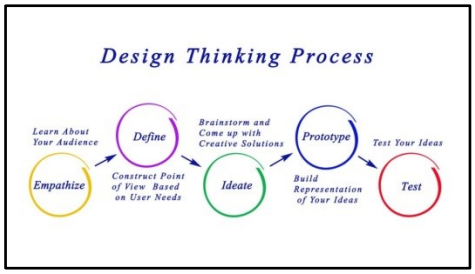

Figure 1. Design Thinking Method Modeling Stage

2.1 Analysis

In this study, the type of research used is qualitative research with *the Strategy of Design and Creation*. According to the book *Researching Information Systems and Computing* written by Briony J Oates (2005), Design and Creation is a combination of research methodology and application development methodology. This approach is very suitable to be applied in this study because it allows the research to go hand in hand with the development to be carried out.

2.2 Data Collection Methods

Data collection methods are methods or techniques used to collect information relevant to the research objectives[15]. This information can be in the form of quantitative (numerical) or qualitative (description) data that is the basis for analysis, interpretation, and conclusion making in a study. Data collection is an important stage in research because the quality of the data collected will affect the validity and reliability of the research results. The data collection method was chosen based on the type of research, the problem being researched, and the data source used.

2.2.1 Literature Study

Literature study is a method of collecting data by reviewing and analyzing written sources that are relevant to the research[16]. In the context of this research, literature studies are carried out by reviewing books, scientific articles, research reports, and other documents related to the application. These resources help researchers understand pre-existing theories, concepts, and practices, which form the basis for developing designed applications.

Literature studies are not only useful for gaining conceptual insights but also provide knowledge about the latest developments in the field being studied. By utilizing literature studies, researchers can find research gaps that need to be addressed, as well as ensure that the methods and approaches used in this study have a strong foundation based on the available literature.

2.2.2 Journal

A journal is a scientific publication that contains a collection of articles that are usually written by researchers, academics, or practitioners in a specific field[17]. Journals function as a medium to systematically disseminate research results, ideas, or new findings to the scientific or professional community. Articles published in journals are generally based on in-depth research and have gone through a peer-review process to ensure their quality and validity. Journals are published periodically, such as monthly, quarterly, or yearly, focusing on one specific area of science, such as education, technology, health, economics, or the arts.

The article has an organized structure, including abstracts, introductions, methodologies, results and discussions, conclusions, and references[18]. Journals can be differentiated into national and international

journals, where national journals focus on local contexts while international journals are published globally with a broader scope of discussion. Journals play an important role as a reliable source of reference, a medium for the dissemination of knowledge, and a means to increase the credibility of authors in their fields. With the existence of journals, knowledge can be disseminated, documented, and used as a basis for innovation and further research.

3. Results and Discussion

3.1 System Planning

UML (*Unified Modelling Language*) UML is a method of visual modeling that is used as a means of designing object-oriented systems. Initially, UML was created by the Object Management Group with the initial version 1.0 in January 1997. UML can also be defined as a standard language for visualizing, designing, and documenting systems or also known as the standard language for *writing a software blueprint* . The following is the system structure that the author has made:

3.1.1 UseCase Diagram

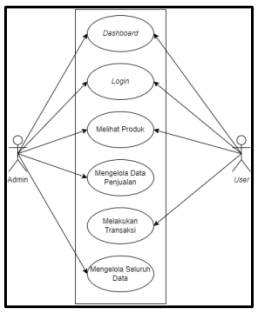

Figure 2. UseCase Diagram

a. Users:
   Access the dashboard
   Login
   View Products
   Making a Transaction
b. Admin:
   Accessing the Dashboard
   Login Admin
   Manage customer data
   Manage rice data
   Manage transaction data
   Manage reports

3.1.2 Activity Diagram Login

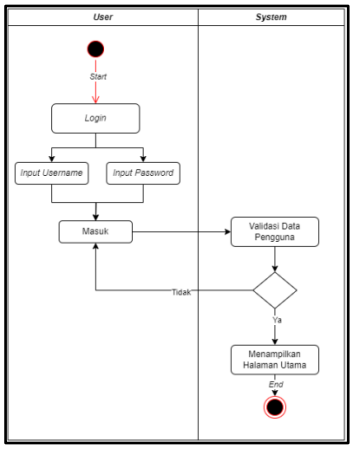

Figure 3. Activity Diagram Login

a. The user selects Login

b. The system asks for Username and Password
c. The user fills in the login data and submits it
d. If valid: The user is signed in to the dashboard
e. If invalid: System reverts to the login menu

3.1.3 Activity Diagram Register

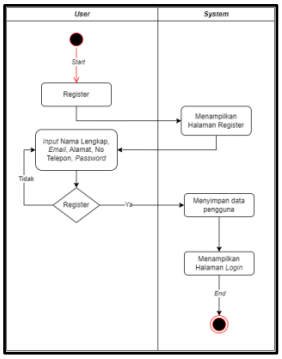

Figure 4 Activity Diagram Register

a. The user selects Register
b. System displays the Register page
c. User inputs: Full Name, Email, Address, Phone No, Password
d. The user selects the Register Button
e. The system stores user data
f. System displays *the Login page*

3.1.4 Flowchart

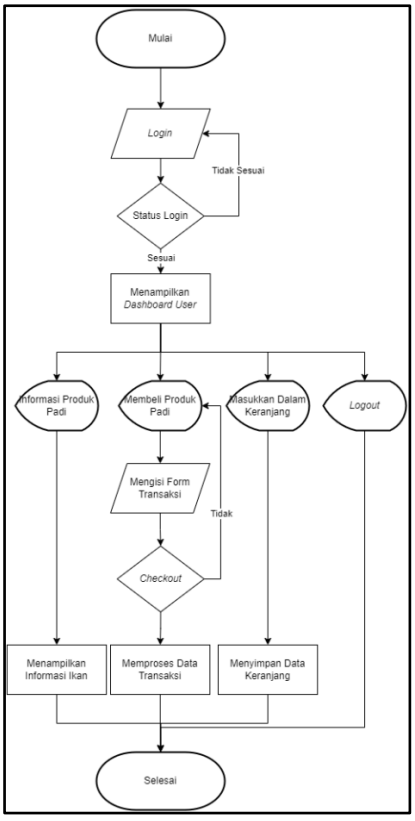

Figure 5. Flowhart

a. Get Started

The process begins with the user opening the app.

b. Login
   The user enters the login credentials.
c. If the login is not suitable, the user is directed to repeat the login process.
d. If the login is appropriate, the user proceeds to the next step.
   Status Login
   The system verifies the user's login status.
   If valid, the system will display the User Dashboard.
e. Dashboard User

3.2 Design

App design using Android studio refers to the process of planning and creating a user interface (*UI/UX)* as well as application functionality for the Android operating system. Here's a rough design overview of the application I designed:

Figure 6. User & Admin Login View

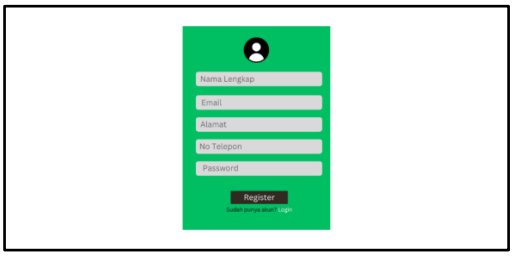

Figure 7. User Registration Display Design

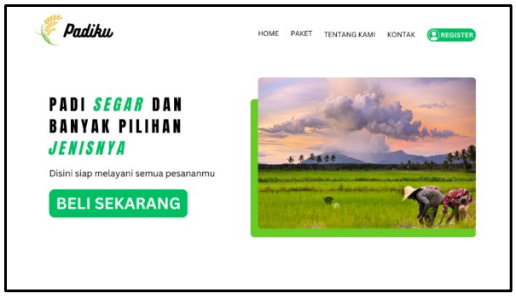

Figure 8. Main Menu Display Design

Figure 9. Design Our Contact Display

Figure 10 Display Design About Us

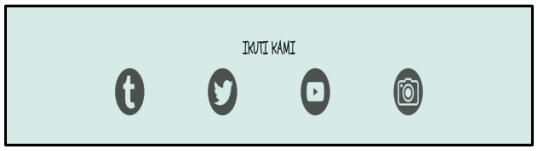

Figure 11. Display Design Follow Us

Figure 12. Dashboard Display Design (Admin)

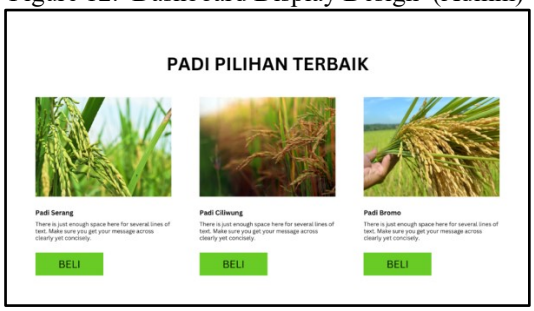

Figure 13. Purchase Display Design

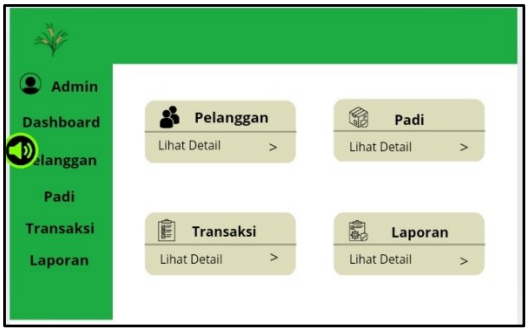

Figure 14. Admin Dashboard Display Design

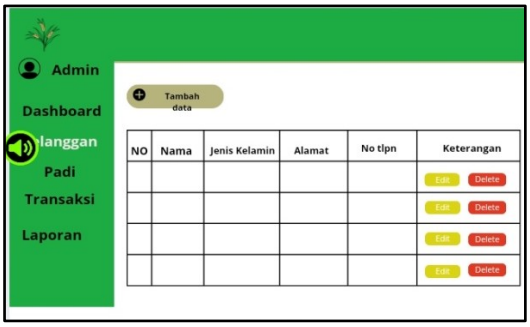

Figure 15. Transaction Menu Display Design (Admin)

3.3 Results applied

This research is expected to produce a UI/UX design of a website-based application that is effective, efficient, and user-friendly for rice crop collectors in Kotanegara Village. The expected results include:

1) Responsive Interface Design
   The app is designed with an interface that is easy to understand, responsive, and works well on a variety of devices.
2) Efficiency of Crop Management Process
   With features such as crop data management, transparent market price information, and transportation schedule settings, the application is expected to improve the efficiency of collectors' work.
3) Improved Communication between Farmers and Collectors
   The app is expected to provide a better communication channel between farmers and collectors, thereby reducing potential misunderstandings and improving coordination.
4) Centralized, Well-Documented Data
   Centralized crop data management allows collectors to store, access, and utilize information more easily and organized.
5) Digital Transformation in Agricultural Ecosystems

This application is expected to encourage digital transformation in the agricultural sector of Kotanegara Village, supporting more modern and sustainable management.

4. Conclusion

This research entitled "Website-Based Application UI/UX Design for Rice Crop Collectors in Kotanegara Village with Design Thinking Method" aims to provide innovative solutions that focus on user needs. Through the Design Thinking method, this study succeeded in designing an application prototype designed to make it easier for collectors to manage crop yields, access market price information, and improve coordination with farmers. The results of this study show that the application of website-based technology can support work efficiency, transparency, and better data management. With a responsive and user-friendly interface design, this application is expected to be the first step in encouraging digitalization in the agricultural sector, especially in Kotanegara Village.

In addition, this study shows that the use of the Design Thinking method is able to produce application designs that really focus on user needs. With an iterative and solution-based approach, the application design not only addresses the problem of communication and work efficiency of collectors, but also opens up opportunities for digital transformation in the agricultural sector. This application can be a significant first step to encourage the adoption of technology in other villages, so that it can have a wider positive impact in improving the welfare of farmers and collectors

Suggestions

Based on the results of the research, several suggestions can be proposed for the development of this application:

1) Applications that have been designed need to be tested more widely by involving more users, both collectors and farmers, to ensure the resulting design is truly tailored to their needs.
2) The app can be further developed by integrating additional features, such as an online payment system, shipment tracking, and access to weather information to support the harvest distribution process. To ensure that the implementation of the application runs well, it is necessary to support digital infrastructure in Kotanegara Village, such as an adequate internet connection and training for application users.

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