Design of a Web-Based User Interface for a Fish Farm Investment Information System

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Abstract
The fisheries sector in Indonesia holds significant potential for national economic development. In addition to supporting food security, this sector also plays a role in creating business opportunities and employment. One of the most promising subsectors is aquaculture, including fish farming, which has high market demand and sustainable development prospects. However, the development of fish farms still faces challenges, particularly limited access to information and connectivity between fish farmers and potential investors. Many farmers possess promising business potential but struggle to obtain capital, while investors encounter difficulties in accessing reliable information on investment opportunities. This information gap hinders optimal growth and cooperation in fish farming businesses.This study aims to design a web-based user interface for a fish farm investment information system as a solution to these issues. A well-designed interface is expected to facilitate users, both farmers and investors, in accessing information, conducting investment simulations, and obtaining recommendations tailored to their needs. The study employs the prototype method with the following stages: communication, quick plan and modeling, quick design, construction of prototype, deployment, and feedback.The results of this interface design are expected to serve as the foundation for further system development. Moreover, the proposed system is expected to become an integrated platform that provides direct benefits for fish farmers, investors, and administrators, thereby supporting fish farm investment processes in a more effective, efficient, and sustainable manner.

Keywords: Interface (UI/UX); Investment; Prototype; Information System; Fish Farm.

1. Introduction
Indonesia's fisheries sector has significant potential for economic development and represents a promising business prospect, making it one of the nation's leading sectors (Dinda Saima Agustina Siregar dan Mutammimul Ula, 2022). As a key sector, fisheries not only contribute to food security but also create business opportunities and employment, particularly in rural communities (Loso Judijanto et al., 2024). One promising subsector is aquaculture (Husain et al., 2016). Aquaculture refers to the cultivation and breeding of fish or other aquatic organisms, also known as aquatic farming. It encompasses the entire process of breeding aquatic organisms, from production and harvesting to marketing (Putra et al., 2019).

Fish farming is one form of aquaculture that has gained considerable interest due to high market demand and sustainable development opportunities. The large market potential encourages farmers to continuously expand their operations to achieve optimal results. However, despite its promising potential, fish farming still faces various challenges.

One of the fundamental issues in fish farming is the limited access to information between fish farmers and potential investors. Many farmers have promising business prospects but struggle to secure capital, while potential investors face difficulties in obtaining reliable information regarding aquaculture investment opportunities. This information gap limits collaboration opportunities and hinders optimal growth in fish farming businesses.

To address these challenges, an information system is needed to bridge communication and align the needs of both fish farmers and investors. An important aspect of developing such a system is the design of the user interface (UI/UX). The User Interface (UI) serves as a medium for users to interact with the system, while the User Experience (UX) refers to how well the interface meets user needs (Ningrum et al., 2022). A well-designed interface facilitates information access, investment simulations, and the delivery of relevant recommendations (Yovan & Hadiq, 2024).

Based on this background, this study aims to design the user interface of a web-based fish farm investment information system using the prototype method. This approach produces an initial

framework for systematic interface design, enables early evaluation, and serves as a foundation for further system development. The prototype development stages include (Widiastra et al., 2023): communication, quick plan and modeling, quick design, construction of prototype, deployment, and feedback. The resulting design is expected to accommodate the needs of fish farmers, potential investors, and system administrators in a single integrated platform, thereby supporting fish farm investment processes. Ultimately, this prototype will serve as the basis for developing a fully operational information system that can be directly utilized by fish farmers and investors to maximize benefits.

2. Method

This study applies the prototype method, which is an approach to system development carried out quickly and incrementally (Lie & Giap, 2021). A prototype is an initial design of a software system that serves to illustrate ideas, test designs, and identify as well as discover potential problems that may arise. Through this process, developers can explore alternative solutions before the system is fully completed (Eka Wulansari et al., 2021). The purpose of the prototype method is to obtain more comprehensive data and understanding regarding system requirements, so that the final result better aligns with user expectations (Badeni et al., 2024).

The stages of the prototype method in this study consist of several steps (Oktaviani & Insany, 2022).

2.1. Communication

This stage involves communication and initial data collection, namely the analysis of user requirements.

2.2. Quick Plan

The second stage is quick planning, which focuses on identifying and organizing systemrequirements.

2.3. Modeling Quick Design

The third stage is quick design modeling, where the workflow of the application to be developed is designed.

2.4. Construction of Prototype

This stage is used to build the prototype of the user interface design that has been created.

3. Results and Discussion

3.1 Communication Stage

The initial stage was carried out by identifying user requirements through literature studies, observation of fish farmers' and investors' workflows, as well as discussions with relevant stakeholders.

3.2 Quick Plan Stage

At this stage, resources and specifications were determined based on both functional and non-functional requirements.

3.2.1 Functional Requirements

- **Investor**
  - Display of fish farm data summaries
  - Fish farm investment simulations
  - Fish farm recommendations
- **Fish Farmer**
  - Add fish farm data to record land area, fish species, operational costs, and harvest data
- **Administrator**
  - Add fish farmer data

- Update fish farmer data
- Manage investor and fish farmer data
- Delete fish farmer data

3.2.2 Non-Functional Requirements

The non-functional requirements consist of hardware and software specifications.

3.3 Modeling Quick Design Stage

At this stage, the workflow design of the system is created, along with the design of the actors and processes that will interact within the fish farm investment system using UML diagrams such as the Use Case Diagram. The Use Case Diagram illustrates the interaction between users and the system (Pangala et al., 2023). The Use Case Diagram is used to identify the functions within a system and the stakeholders involved in it (Tombeng et al., 2023). A use case also allows us to determine what interactions will be carried out by the system being developed (Kristianingrum & Al-Fadillah, 2022).

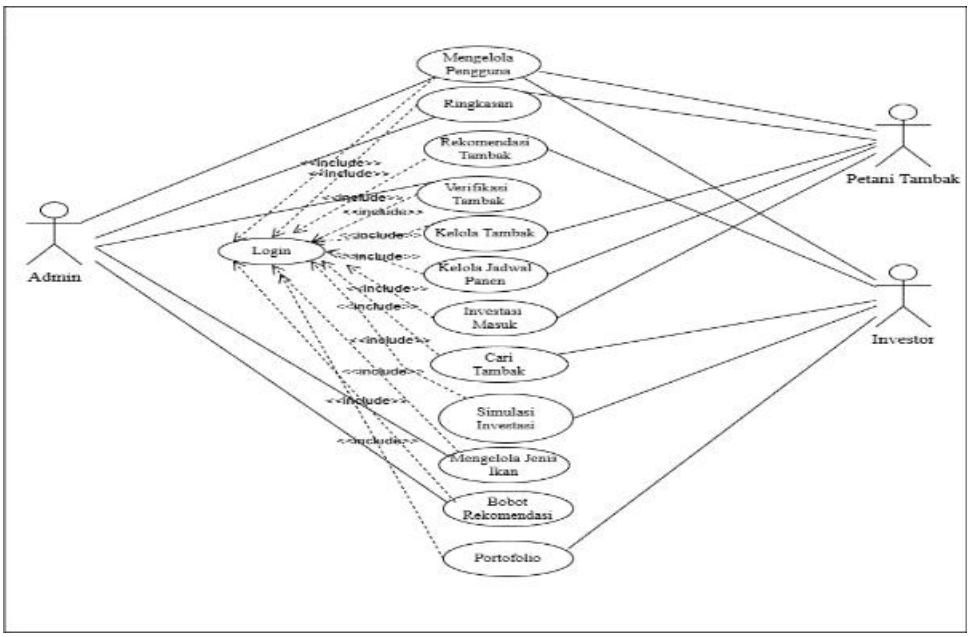

Figure 1. Use Case Diagram

3.4 Construction of Prototype Stage

This stage produced an interactive prototype using design software such as Figma. The following is the result of the fish farm investment system prototype:

3.4.1. Login Page Design

This page is used to log in to the pond investment system, so that users can directly access the main investment management features both as admins, investors and pond owners.

Figure 2. Login Page Design

3.4.2. Homepage Design

The main page of the website displays information such as home, about, features, gallery, team, packages, contact and simulations as well as recommendations so that users can monitor progress and make decisions.

Figure 3. Homepage Design

3.4.3. Admin Dashboard Design

The admin dashboard provides complete access to manage investment data, monitor user activity, and oversee farm operations in real-time for smooth system management.

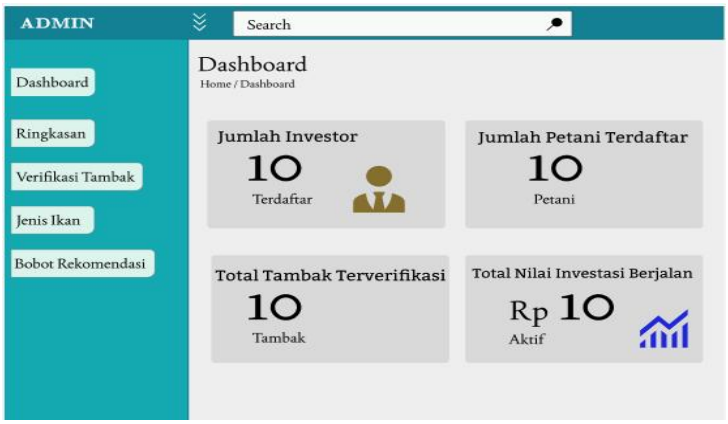

Figure 4. Admin Dashboard Design

3.4.4. Investor Dashboard Design

The investor dashboard displays a real-time summary of the investment portfolio, farm yield developments, and financial reports to help investors easily monitor and manage their investments.

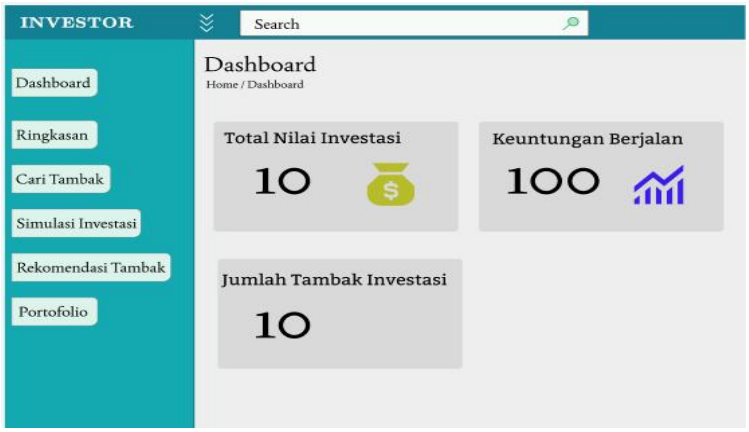

Figure 5. Investor Dashboard Design

3.4.5. Fish Farmer Dashboard Design

The pond farmer dashboard provides operational information, maintenance schedules, and harvest reports to support farmers in managing and optimizing pond production efficiently.

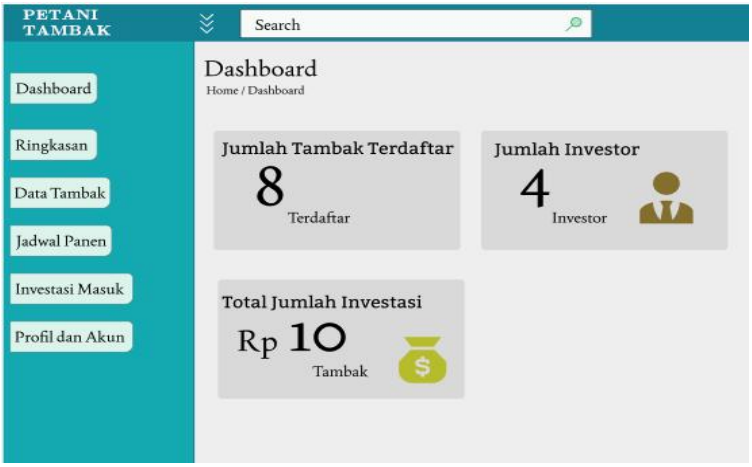

Figure 6. Fish Farmer Dashboard Design

4. Conclusion

Based on the design results, it can be concluded that the prototype of the fish pond investment information system interface was successfully developed using the prototype method. This prototype is able to illustrate the functional and non-functional requirements of users and serves as an initial framework for the development of a more comprehensive information system. As a follow-up, this research will be directed toward developing the prototype into an information system that can be practically implemented, thereby providing optimal benefits for investors, fish farmers, and administrators in supporting more accurate, efficient, and sustainable investment decision-making.

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