

ABSTRACT

This study aims to analyze the development of an Internet of Things (IoT)-based livestock breeding and feed management application using the Design Thinking approach in the sheep farming industry, a case study at PT Agro Surya Perkasa. This application is expected to provide innovative solutions to improve breeding efficiency, optimize feed management, and support the sustainability of modern livestock farming.

The research method used is a qualitative-descriptive approach with a Design Thinking framework consisting of five stages: Empathize, Define, Ideate, Prototype, and Test. Data were collected through in-depth interviews, field observations, and literature analysis. Interview criteria include farmers with more than five years of experience, livestock operational managers, and technology experts in the IoT field. The focus of the interview includes challenges in the breeding process, feed efficiency, application user needs, and the level of technology adoption on the farm.

This study begins with the identification of a core problem during the empathize and define stages: smallholder sheep farmers remain highly dependent on manual labor, which is inefficient, and lack access to appropriate tools, technology, and practical knowledge. In the ideate stage, the proposed solution was a lightweight and user-friendly livestock management application, featuring automated feed recommendations, estrus cycle reminders, and health monitoring. During the prototype stage, the application interface was designed using Figma, with an emphasis on simplicity and ease of use. The test stage involved a usability assessment using the System Usability Scale (SUS), which categorized the application as marginal (OK), indicating moderate effectiveness in supporting farmers with feed and breeding management.

Keywords: *IoT, breeding, feed management, design thinking, sheep farming.*