

ABSTRACT

Rooftop Farming Center is an innovation by Telkom University Surabaya designed to support modern livestock management through the application of information technology. Although the current system utilizes Internet of Things (IoT) technology for monitoring, it still faces challenges in operational and inventory data recording, which is conducted manually. This leads to suboptimal farm management. This research aims to develop an Android-based application that serves as a real-time monitoring tool for operational and inventory activities, in order to improve data recording accuracy.

The Design Thinking approach is applied in this study to understand user needs and design appropriate solutions. The research stages include empathize, define, ideate, prototype, and test. The application is developed using Flutter for the user interface and Node.js for backend management, with the SCRUM framework guiding the iterative development process. Black Box Testing is employed to ensure application functionality, the System Usability Scale (SUS) is used to assess usability levels, and User Acceptance Testing (UAT) is conducted to validate acceptance by end users.

This research results in a monitoring application for livestock operations and inventory, with testing outcomes showing that 100% of the functionality scenarios in the Black Box Testing were successful. The application achieved a final SUS score of 81, indicating a "Very Good" level of usability, and the UAT confirmed full acceptance by the target users. Therefore, it is 100% concluded that the developed application successfully serves as a functional, beneficial, and acceptable solution for digitizing and optimizing operational and inventory management at RFC.

Keywords: *Rooftop Farming Center, Smart Farming, Design Thinking, SCRUM, Android.*