

ABSTRACT

Barokah Oyster Mushroom Cultivation as an MSME in Indonesia faces challenges in monitoring temperature, humidity, and classifying oyster mushroom growth phases, which are still carried out manually, thus risking inefficiency and limited historical data. This study aims to design a monitoring system architecture and oyster mushroom growth phase classification based on the Internet of Things (IoT) and object detection, using the Waterfall approach and the 4+1 View Model framework. The system was developed to monitor the temperature and humidity of the mushroom house in real-time and classify the oyster mushroom growth phase based on visual images. Evaluation was carried out by measuring the Mean Time To Recovery (MTTR), Mean Time Between Failures (MTBF), and availability. The test results showed that the temperature and humidity module had an MTTR of 31.2 seconds and an MTBF of 23.07 hours, while the camera module had an MTTR of 27.3 seconds and an infinite MTBF, with availability values of 99.96% and 100%, respectively. These findings indicate that the designed system architecture is able to ensure high reliability and availability, thus supporting more efficient and sustainable oyster mushroom cultivation practices at the MSME scale. This research contributes to the development of IoT-based information system architecture in the agricultural sector.

Keywords — Oyster mushroom, monitoring system, visual classification, IoT, software architecture.