

ABSTRACT

UMKM Barokah Oyster Mushroom Cultivation is a micro business engaged in oyster mushroom cultivation. Monitoring of environmental conditions such as temperature and humidity is still done manually and based on intuition, making it difficult to document and make data-based decisions. This research aims to design and implement an Internet of Things (IoT)-based monitoring system that can automatically and periodically record temperature, humidity, and document visual conditions of mushroom growth. The system uses Raspberry Pi Zero 2W as the control center, DHT11 sensors to read temperature and humidity, and Raspberry Pi Camera Module 3 to take pictures of the mushrooms every morning. The collected data is sent to the Aiven PostgreSQL database in real-time through an API built with Node.js.

This research uses an experimental method, with stages including planning, needs analysis, system development, and testing. Evaluation was done by comparing the sensor readings with a reference measuring instrument, resulting in a Mean Absolute Error (MAE) of 1.38°C for temperature and 6.26% RH for humidity. Although the humidity error exceeds the general tolerance of $\pm 5\%$, it is still acceptable as the fluctuation is within the ideal humidity range for mushroom cultivation, which is 70%-90% RH. The system has been proven to support a more efficient and well-documented monitoring process and has the potential to be implemented sustainably as part of an agricultural information system for microenterprises.

Keywords: *internet of things, oyster mushroom cultivation, dht11 sensor, raspberry pi, environmental monitoring*