RINGKASAN

Telah dilakukan penelitian tentang rancang bangun sistem pemantauan dan kendali kualitas air kolam ikan lele berbasis *internet of things (IoT)*. Penelitian ini menggunakan model sekuensial linier atau sering disebut model pengembangan air terjun/ *waterfall development*. Penelitian dilakukan melalui tiga tahapan yakni pembuatan instrumen sistem pemantauan dan kendali kualitas air menggunakan sensor pH dan sensor suhu, kemudian pengambilan data, dan pengolahan data pada bulan Desember 2023 hingga Maret 2024. Pengambilan data dilakukan di tempat pembudidayaan ikan lele yang terletak di Desa Muaro Pijoan, Kecamatan Jambi Luar Kota, Kabupaten Muaro Jambi. Pembuatan rangkaian uji sensor Ph, sensor suhu dan sensor jarak dilakukan pada aplikasi *fritzing*. Pemantauan data yang dilakukan menggunakan ESP32 sebagai pengirim data dari keseluruhan sensor yang kemudian dikirimkan ke *smartphone*. Pengujian seluruh sensor didapati hasil akurasi mencapai 99% dan presisi sangat teliti. Sebagai perbandingan nilai keluaran sistem dalam pengujian sensor digunakan pengukuran secara manual pula, menggunakan pH tester standar, thermometer tester standar, dan alat ukur panjang standar. Setelah dilakukan pengujian terhadap sistem, maka dilakukan pemeliharaan dan pengoperasian untuk melihat pengoperasian sistem dalam jangka panjang. Data pemantauan yang dilakukan dalam pengoperasian sistem dilihat melalui aplikasi *Blynk*.

SUMMARY

Research has been carried out on the design of an IoT-based system for monitoring and controlling water quality for catfish ponds. The research was carried out in three stages, namely creating water quality monitoring and control system instruments using pH sensors and temperature sensors, then data collection and data processing from December 2023 to March 2024. Data collection was carried out at the catfish cultivation site located in Muaro Pijoan Village, Jambi Outer City District, Muaro Jambi Regency. This research uses a linear sequential model or often called the waterfall development model. Making a test series for Ph sensors, temperature sensors and distance sensors was carried out for the fritzing application. Data monitoring is carried out using the ESP32 as a data sender from all sensors which is then sent to the smartphone. Monitoring results taken via the Blynk application. As a comparison of the system output values, manual measurements were also used, using a pH tester, thermometer tester, and length measuring instrument. After testing the system, implementation is carried out to see the long-term operation of the system. Monitoring data carried out in the implementation of the system is seen through the Blynk application.