

INTISARI

Pengembangan Sistem Informasi Monitoring Kualitas Air secara *Real-Time* Berbasis *Internet of Things* pada Budi Daya Ikan

Kualitas air merupakan faktor penting dalam keberhasilan budi daya ikan, namun pemantauan yang masih dilakukan secara manual memiliki keterbatasan dalam efisiensi, kontinuitas pengamatan, dan kecepatan memperoleh informasi. Penelitian ini bertujuan mengembangkan sistem informasi monitoring kualitas air yang terintegrasi dengan *Internet of Things* (IoT) untuk pemantauan parameter suhu, derajat keasaman (pH), *dissolved oxygen* (DO), dan *total dissolved solids* (TDS) secara *real-time* serta mengetahui tingkat penerimaan pengguna terhadap sistem yang dikembangkan. Penelitian dilaksanakan di Loka Perbenihan dan Budidaya Ikan Air Tawar Ngrajek Kabupaten Magelang, UPT Pengembangan Budidaya dan Pemasaran Perikanan Sempu Kabupaten Sleman, dan Pokdakan Mina Taruna Garongan Kapanewon Turi Kabupaten Sleman menggunakan metode *Research and Development* (R&D) dengan model *Analysis, Design, Development, Implementation, dan Evaluation* ADDIE. Hasil penelitian menunjukkan bahwa sistem berhasil dikembangkan dan mampu menampilkan informasi parameter suhu, pH, DO, dan TDS secara *real-time*, dilengkapi fitur analisis dan peringatan dini untuk mendukung pengambilan keputusan. Pengujian *Black Box Testing* menunjukkan seluruh fungsi sistem berjalan sesuai rancangan, sedangkan hasil uji reliabilitas dan uji beta menunjukkan tingkat konsistensi instrumen yang sangat baik serta penerimaan pengguna yang sangat positif. Dengan demikian, sistem yang dikembangkan berpotensi mendukung kegiatan monitoring kualitas air budi daya ikan secara lebih efektif dan efisien.

Kata kunci: *Internet of Things*, kualitas air, monitoring *real-time*, sistem informasi, budi daya ikan.

ABSTRACT

Development of an Internet of Things Based Real-Time Water Quality Monitoring Information System for Aquaculture

Water quality is a critical factor in the success of fish farming; however, monitoring that is still conducted manually has limitations in terms of efficiency, continuity of observation, and speed of obtaining information. This study aims to develop a water quality monitoring information system integrated with the Internet of Things (IoT) to monitor temperature, degree of acidity (pH), dissolved oxygen (DO), and total dissolved solids (TDS) parameters in real-time, as well as to determine the level of user acceptance toward the developed system. The research was conducted at Loka Perbenihan dan Budidaya Ikan Air Tawar Ngrajek, Magelang Regency; UPT Pengembangan Budidaya dan Pemasaran Perikanan Sempu, Sleman Regency; and Pokdakan Mina Taruna Garongan, Turi District, Sleman Regency, using the Research and Development (R&D) method with the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model. The results show that the system was successfully developed and is capable of displaying temperature, pH, DO, and TDS parameter information in real-time, equipped with analysis and early warning features to support decision-making. Black Box Testing results indicate that all system functions operate as designed, while the reliability test and beta test results show a very good level of instrument consistency and highly positive user acceptance. The developed system has the potential to support water quality monitoring activities in fish farming more effectively and efficiently.

Keywords: Internet of Things, water quality, real-time monitoring, information system, fish culture.