

ABSTRACT

The Internet of Things (IoT) technology facilitates data collection and performance monitoring through sensors affixed to physical equipment and machinery. In the context of catfish farming, water quality monitoring is paramount to ensure the health and growth of fish. However, manual monitoring methods are often less efficient and susceptible to errors arising from human factors. This study proposes an IoT-based water quality monitoring system for catfish aquaculture, designed to identify and address water quality issues directly. The designed system utilizes a number of sensors to measure essential variables such as pH, temperature, and ammonia concentration in water. The data recorded by these sensors is then transmitted to a monitoring application via an IoT network for analysis. The development of this system was initiated through the implementation of a prototype method in a catfish pond situated in Karangreja, Purwokerto Kidul, South Purwokerto District, Banyumas Regency, Central Java. The outcomes of this study are anticipated to demonstrate the efficacy of the IoT system in providing precise and authentic water quality data, a notable advantage of the system, which has the potential to assist catfish aquaculture managers in formulating suitable preventive measures. The tests conducted in the pond water system revealed that the temperature sensor recorded an average water temperature of 28.6 °C, the pH sensor recorded an average pH of 7.54, and the ammonia sensor recorded an average ammonia gas level. The ammonia gas level registered at 0.66 ppm. The status of the pond water condition can be used for catfish farming, and when the parameters show the state of pH, temperature, ammonia in high or low conditions, the application will provide notification. Thus, this study is expected to reduce human error, increase monitoring efficiency, and encourage innovation in fish farming.

Keywords: *Internet of Things, water quality, monitoring, catfish, sensors.*