ABSTRACT

Geographically, Indonesia is an archipelagic country that has a wider water area than its land area. With these natural conditions, one of Indonesia's main export commodities comes from the fisheries sector. Catfish is a type of fish that is much sought after by pond fish farmers. However, in cultivating catfish there are several obstacles that are often experienced by farmers, especially when maintaining the water quality in their ponds. Meanwhile, water quality is one of the determinants of success during the cultivation process. Based on this problem, this research will design a tool that can monitor and carry out filtration by focusing on three main parameters, namely oxygen levels, temperature, and turbidity in fish pond water quality. In this research, the tool will be paired with monitoring sensors and equipped with filtration which will be carried out in two stages, namely mechanical and biological with the application of the Tsukamoto fuzzy method in determining the filtration speed required in the pond. Apart from that, the sensor value readings will later be sent to an application using IoT which farmers can use when monitoring the water quality levels in their ponds. With this feature, farmers can monitor the water quality of their ponds anytime and anywhere. From the test results, it was found that with the design that has been designed, this research tool is able to monitor and filtrate water quality in catfish ponds and is able to assist farmers in maintaining water quality in their catfish ponds. Based on the trials that have been carried out, it can be concluded that the system in this research tool as a medium for monitoring and filtrating water quality in catfish ponds can be used directly in catfish cultivation.

Keywords: *Cultivation, Filtration, Fuzzy Tsukamoto, IoT, and Monitoring*