ABSTRACT

An egg incubator is a tool that can help chicken farmers in incubating chicken eggs without being incubated by a hatcher. There are three types of incubators on the market, namely manual, semi-automatic, and fully automatic types. Each of the three types of incubators has its advantages and disadvantages. The difference between the three is in turning the eggs and controlling temperature and humidity, this is still done manually and inefficiently.

This study makes a prototype incubator for hatching chicken eggs using the NodeMCU microcontroller which is connected to a telegram and database. In this study the inkubator prototype was successfully designed according to the needs, temperature and humidity can be monitored through the website, and telegram gets a notification of any changes that occur in the incubator. And the designed incubator is fully automatic so it is more efficient in its use.

From several tests carried out, the accuracy-test got a value of 97.02%. And for testing the Quality of Service (QoS) from the tool to the database, the *Throughput* value is 21.8 Kbps during free time and 21.8 Kbps when busy, and from end-users to the website, the *Throughput* value is 1.34 Mbps at free time, 0.93 Mbps when busy. The delay parameter from the tool to the database gets a value of 80 ms during free time and 78 ms when busy, and from the end-user, to the website it gets a value of 5 ms during free time and 8.8 ms when busy. And for the QoE measurement from the prototype tool and the website, the MOS value results with an average of above 4 with a small standard deviation.

Keywords: *incubator, internet of things, website, telegram, Quality of Service, Quality of Experience, NodeMCU.*