ABSTRACT

In Indonesia, shared boarding house (known as "indekos") have a significant demand for clean water. However, water consumption habits are often inefficient. Some residents frequently invite guests to stay with them, use water for side businesses like shoe cleaning services, or employ portable washing machines. This contradicts the practices of boarding house landlords who impose fixed monthly bills. This gap ultimately results in losses for landlords, and this issue needs for a system solution that can monitor water usage and calculate fair bills for both landlords and residents.

This research has successfully designed an Internet of Things (IoT)-based water consumption monitoring system using the principles of Wireless Sensor Network (WSN) in boarding house. Four YF-S201 water flow sensor nodes in the water pipe network prototype are integrated with the Blynk App platform, allowing real-time monitoring of water consumption activities in each room. The system's user interface is designed to display information such as total water consumption volume, flow rate, tariff, total bills, excess consumption classification, and water consumption graphs. Consequently, water usage in boarding house can be better monitored and recorded, becoming more efficient and providing a fair pricing mechanism for landlords.

A comprehensive analysis of this system records the accuracy of sensor node 1 at 98,79% with an average delay of 1,19 seconds, sensor node 2 at 99,24% with an average delay of 1,12 seconds, sensor node 3 at 98,81% with an average delay of 1.14 seconds, and sensor node 4 at 99,15% with an average delay of 1.12 seconds. Based on a brief survey, the ease and effectiveness of the system's user interface also received an average rating of 8.83 out of 10 for aspects including application accessibility, navigation ease, design and appearance, information comprehension, responsiveness and speed, feature effectiveness, and overall user experience.

***Keywords**: Boarding house water consumption, Internet of Things (IoT), Wireless Sensor Network (WSN), YF-S201 water flow sensor node, Blynk App*