

ABSTRACT

Kale is one of Indonesia's most popular vegetables. Kale is often found across agricultural area in Indonesia, not just in restaurants. Kale farming is one of the prospective agricultural business opportunities and is considered simple. However, Kale plantation presents unique obstacles due to the kale's vulnerability and impacted to the harvest instability. Therefore, the agricultural system of smart farming for growing Kale must be revitalized. Previously, a global system schema using Internet of Things (IoT) for Kale's farming was proposed. That research technique then upgraded with the current research technique, which employs a Machine Learning System to support Kale cultivation through smart farming. Machine learning system strategies can be a solution for accurately and intelligently growing kale. This strategy can be combined with the acquisition of fresh kale growth data, prediction models in the planting phase, and the production of an ideal growth model.

The method employed is to create a systematic design for predictive model datasets, beginning with data collecting in IoT, data storage in MySQL databases, Firebase, and data modeling using machine learning methods utilizing supervised learning. The results of monitoring room temperature, humidity, and light intensity in the greenhouse are impacted by irregular weather conditions, but they have no effect on the plants because they are in the greenhouse. QoS testing obtained an average delay of 2.472 seconds and a throughput of 6851 bits per second. Accuracy and precision metrics yield a perfect score of 100%. Based on the test results, it can be explained that the value of the Quality of Service measure and machine learning performance reaches the best value for the optimal dataset and prediction model outputs, specifically developing an ideal kale growth model for the farmer's environment.

Keywords: IoT, kale, QoS, MySQL, Firebae, Machine Learning, supervised learning, datasets