Abstract
Hydroponic planting can be automated with the help of the internet of things (IoT) and sunlight is one of the factors that affect hydroponic growth. However, due to environmental conditions that are not ideal, the nutrients from lighting are not sufficient. This study aims to design, manufacture, and use a hydroponic automation system by combining the quality of plant growth using LED grow lights and natural light conditions in hydroponics. In the proposed hydroponic automation system, light feeding is carried out automatically, this can be done with the help of modules and real-time clock (RTC) relays, monitoring is carried out through temperature and humidity measurements. The data obtained from the sensors are stored in the database. The comparison results showed that LED grow lights were superior in terms of fresh weight, number of leaves, and plant height with an average value of 23.6 grams, 11.2 leaves, and 18.1 cm on day 30. Compared to sunlight, the average values were 20.2 grams, 9.3 leaves, and 17.1 cm on day 30. PDF calculations and t-test were used to calculate the significance of growth. The result was H0 for fresh weight and leaf growth rate was rejected and H0 for plant growth rate was not rejected. It can be said that LED grow lights have a significant effect on the growth rate of IoT-based bok choi hydroponic leaves when compared to sunlight.