ABSTRACT

The development of technology and information in recent years has greatly influenced the daily lives of the world's people, including Indonesia. Electricity and the internet are mandatory requirements. However, this development is not in line with the technology used in electricity in Indonesia. Analog kWh meters are still widely used, so the recording of electricity usage is still done manually. Customers also cannot see how their electricity usage behavior. By using IoT, the recording of electricity consumption can be automatic. With enough data, it can be grouped into several clusters to determine user behavior.

In this study, it is proposed to use IoT devices to record electricity consumption data, as well as clustering electricity consumption data using the K-Means++ algorithm. The algorithm was chosen because of its better performance than the K-Means algorithm. Four types of clustering will be created, monthly, daily, hourly, and between devices. Each type consists of three clusters, namely low, medium, and high.

A clustering system that can cluster electricity usage data has been successfully created. Based on the test results, the best average silhouette coefficient and DB index occurred when doing hourly clustering with one day of data. The best silhouette coefficient and DB index values are 0.81998 and 0.21641. It means the created cluster has a strong structure and is well partitioned.

Keywords: electricity, k-means++, clustering, MQTT