

ABSTRACT

Oyster mushroom cultivation is one of the businesses that are widely run by Micro, Small and Medium Enterprises (MSMEs), one of which is Barokah Oyster Mushroom Cultivation. The main problem in the cultivation process is the monitoring of temperature and humidity of the barn which is still done manually, relying on intuition without records or sensors, resulting in inaccuracy in making maintenance decisions and the risk of reducing yields. In addition, low digital literacy and limited operational costs are the main obstacles in technology adoption by MSME actors. To address these issues, this research develops a digital twin monitoring dashboard with data visualization using a free cloud platform, Google Looker Studio. Environmental data is collected through IoT sensors and stored in a PostgreSQL database system. The system development process uses the Waterfall method and evaluation is carried out using the Post-Study System Usability Questionnaire (PSSUQ) instrument to assess the ease of use of the system for non-technical users. The results showed that the dashboard was able to display real-time temperature and humidity data, historical graphs, information on mold growth phases, and treatment recommendations. The overall average score of PSSUQ of 1.63 indicates a very good level of user satisfaction. The dashboard built not only supports efficient monitoring of cultivation conditions, but also remains easy to use by MSME players. The presence of this dashboard is expected to be the beginning of the application of data-based technology in oyster mushroom cultivation practices, so that the maintenance process can be carried out more precisely and sustainably.

Keywords – cloud platform, dashboard monitoring, data visualization, digital twin, IoT, MSMEs, oyster mushroom cultivation