

ABSTRACT

Indonesia's mining sector is a significant contributor to Greenhouse Gas (GHG) emissions, yet its reporting systems are hampered by manual processes that are inaccurate, time-consuming, and costly. This research aims to design an integrated information system based on the Internet of Things (IoT) to automate Scope 1 emission reporting, as well as to measure the usability and accuracy of the developed system. The development method used is Iterative and Incremental across three phases, with a technology stack including Laravel for the dashboard, Python for automated emission calculations, and MySQL as the database. System evaluation was conducted through User Acceptance Test (UAT) and the System Usability Scale (SUS), involving an expert consultant. The result is a functional web-based application equipped with a real-time monitoring dashboard, management modules for sensors and static emission sources, and an automatic report export feature. Based on testing, the system achieved a SUS score of 92.5, indicating excellent usability. In conclusion, the developed system successfully provides a valid and efficient reporting solution and is proven to be well-accepted by users as a reliable monitoring tool.

Keywords— information system, greenhouse gas, application, internet of things, reporting