ABSTRACT

Waste management problems in Indonesia are increasingly complex as the increasing volume of waste is not accompanied by optimal waste handling, this causes Indonesia to still be the top 5 largest waste producing countries in the world. One of the main causes is the administrative process at temporary disposal sites (TPS) which is still done manually, which is time-consuming and hampers operational effectiveness. In addition, the low participation of the community and stakeholders causes the burden of waste management to be fully borne by the TPS. In an effort to overcome these challenges, Redooceit, a startup that focuses on community-based waste management at the Bandung TPS level, initiated to develop a digital-based waste data management system. This research aims to develop and implement an integrated web-based waste management information system , to support TPS administration in recording and recapitulating reports.

The system development was carried out using an iterative incremental approach in two iteration cycles, with the implementation of features gradually and iteratively. The system was built using Golang (Fiber) technology for the backend, Next.js and Tailwind CSS for the frontend, and PostgreSQL as the database. Test results through load testing and User Acceptance Testing (UAT) show an increase in operational efficiency of more than 85%. The user acceptance rate reached 98%, and the system performance remained stable and able to maintain data accuracy by identifying errors despite a 5x increase in load. Overall, this system is an initial study in optimizing accurate and integrated waste data management, which has the potential to be replicated in other polling stations in Indonesia to support data-driven decision-making in waste management.

Keywords — ***Circular economy, Digitalization, Integrated System, Waste management, Waste Transfer Station (WTS).***