# ABSTRACT

In recent years, the Ministry of Environment and Forestry (KLHK) reported that Indonesia has produced approximately 67 million tons of waste. Plastic waste is one of the biggest problems. Various solutions have been implemented to address this problem, including through waste banks. However, the OH Darling waste bank in Bandung City faces great challenges in managing administration efficiently using conventional methods and experiences difficulties in management as the deposited waste cannot be identified. Technological limitations in recording, bookkeeping, and determining the type of waste that can be deposited are the main problems that need to be addressed immediately to improve the operational efficiency of the waste bank.

The innovative solution offered is a waste bank mobile application with object detection technology that aims to modernize the administrative process and recording of waste-saving transactions. With this application, waste bank administrative data management becomes more structured and easily accessible, improving operational efficiency and transparency. The object detection feature automatically identifies the type of waste deposited. This not only makes it easier for managers to manage transactions but also supports proper waste management, contributing to the reduction of mismanaged waste and bringing a positive impact on the environment.

The results of testing the waste bank application showed a high level of user satisfaction at 96.9%, with functional effectiveness based on blackbox testing and questionnaires. Response time testing identified that the GET method was faster than POST, with the longest response time on garbage detection reaching 1401.13 ms. Object detection testing showed the average speed time for the model to detect objects was 146.94 milliseconds and the mAP score was 0.834. Performance testing revealed differences in resource management between iOS and Android, resulting in higher performance for iOS. Overall, this waste bank app has demonstrated reliable performance with a high level of user satisfaction and good functional effectiveness but requires improvement in processing response time and object detection efficiency for further optimization.

Keywords: Mobile Application, Object Detection, Waste Bank.