ABSTRACT

The increase in carbon emissions from individual activities, particularly in the transportation sector and the consumption of single-use goods, has become a crucial environmental issue. However, awareness and the availability of practical tools to measure and reduce carbon footprints for the productive age group (15-64 years) in Indonesia remain very limited. This research aims to design a mobile application named Carbonize that can calculate the estimated carbon footprint from these two main activities, as well as present the results visually to increase awareness and encourage environmentally friendly behavior. The development method used is the Prototype Model, which proceeds through systematic stages from communication for requirements gathering, planning, model design, prototype construction, to evaluation. The result of this study is a functional Android-based application developed using Flutter and Firebase technologies. Based on testing, the application is proven to be functionally valid, with all 16 black box testing scenarios running successfully. Furthermore, usability testing using the System Usability Scale (SUS) with 15 respondents yielded a final score of 74.67, indicating that the application's ease of use is rated as "Good" and is (Acceptable) to users. The resulting Carbonize application contributes as a concrete and tested solution to increase environmental awareness, providing users with a practical tool to monitor and reduce their carbon footprint, thereby supporting climate change impact mitigation efforts at the individual level.

Keywords: Mobile Application, Carbon Footprint, Prototype Model, Black box Testing, System Usability Scale (SUS), Flutter, Firebase.