ABSTRACT

Online food delivery services have experienced rapid growth alongside the increasing use of digital platforms, particularly among younger generations. However, despite the convenience they offer, numerous customer complaints remain, such as delivery delays, reliance on couriers, and lack of transparent information. To address these issues, drone technology has emerged as a promising alternative solution, as it can bypass traffic congestion and accelerate the delivery process. Nevertheless, drone-based delivery systems require the support of a dashboard capable of displaying real-time delivery information.

This study aims to design and develop a web-based dashboard used by manager and operators to manage orders and monitor the real-time delivery process of food and beverages using semi-autonomous drones. The development process was carried out using the iterative incremental method, in which each stage produced features that were tested and refined based on user needs.

The results show that the developed dashboard successfully displays order data, delivery status, and drone position in real-time through integration with Firebase and the Google Maps API. The system was found to be user-friendly, with a System Usability Scale (SUS) score of 82.5 and a Single Ease Question (SEQ) average score of 6.93. Additionally, performance testing demonstrated that the system can handle multiple requests stably under load testing scenarios. In conclusion, the dashboard meets user needs for a semi-autonomous drone-based food and beverage delivery system and can be implemented as a digital solution at Tel-U Coffee.

Keywords *— dashboard, drone semi-autonomous, iterative incremental, online food delivery, real-time tracking*.