ABSTRACT

The maintenance of academic facilities at the TULT Building of Telkom University has traditionally been carried out manually using physical media such as checklist sheets and control cards. This approach has several drawbacks, including susceptibility to data loss, delayed reporting, and lack of integration and regular monitoring. These issues can lead to undetected facility damage and reduced quality of academic services. To address these problems, a *Monitoring System for Academic Facility Maintenance at the TULT Building of Telkom University* was developed. This system aims to digitize the processes of recording, reporting, and scheduling maintenance activities. It is built using Vue.js for the frontend, Express.js for the backend, PostgreSQL for database management, and a genetic algorithm as a method for optimizing technician scheduling. The system supports preventive maintenance, real-time damage reporting via QR code scanning, and automated notifications to relevant stakeholders. The system was tested through alpha and beta testing. The alpha testing results showed that all features functioned properly, with a 100% success rate. Meanwhile, the beta testing phase involved real users including administrators, technicians, and general users, who provided positive feedback regarding usability, interface design, and system responsiveness. With this system in place, the maintenance process becomes more structured, efficient, and well-documented, thereby helping to ensure the optimal quality of academic facilities.

Keywords: monitoring system, maintenance, genetic algorithm, Vue.js, Express.js, TULT Building