ABSTRAK

Gedung Field Research Center (FRC) Sekolah Vokasi Universitas Gadjah Mada (UGM) merupakan fasilitas yang menerapkan konsep *green building* serta berada di bawah pengawasan *Japan International Cooperation Agency* (JICA) dan UGM. Gedung ini dikelola oleh lima orang staf dan menerima rata-rata 10 hingga 15 laporan kerusakan setiap bulan. Namun, proses pelaporan yang masih dilakukan secara manual melalui WhatsApp dan *spreadsheet* menyebabkan waktu respons penanganan mencapai 1 hingga 2 minggu. Kondisi tersebut menimbulkan berbagai permasalahan, antara lain keterlambatan pencatatan, risiko kehilangan data, tidak adanya pembatasan hak akses, serta kesulitan dalam melakukan pemantauan dan pelacakan riwayat pemeliharaan.

Penelitian ini bertujuan merancang dan membangun sistem informasi berbasis web untuk pelaporan kerusakan fasilitas dan pemantauan utilitas gedung pada FRC Sekolah Vokasi UGM menggunakan metode *Rapid Application Development* (RAD). Pengumpulan data dilakukan melalui observasi, wawancara terstruktur, dan studi literatur. Analisis permasalahan menggunakan kerangka PIECES, sedangkan perancangan sistem menggunakan *Unified Modeling Language* (UML). Sistem dikembangkan menggunakan *framework* Laravel dengan basis data MySQL melalui tiga iterasi *prototyping* dan *design review* bersama pengguna.

Hasil penelitian berupa sistem informasi yang mengintegrasikan pelaporan kerusakan, penugasan teknisi, pemantauan status perbaikan, serta pencatatan data utilitas gedung dalam satu platform berbasis web dengan empat hak akses pengguna, yaitu pelapor, administrator, teknisi, dan pimpinan FRC. Hasil pengujian menggunakan *Black Box Testing* menunjukkan bahwa seluruh 10 skenario pengujian berhasil dijalankan sesuai spesifikasi. Selain itu, *User Acceptance Testing* (UAT) yang melibatkan lima responden memperoleh nilai rata-rata sebesar 95,25%, dengan rincian aspek fungsionalitas sistem sebesar 95%, kinerja sistem 96%, tampilan antarmuka 94%, serta efisiensi dan produktivitas 96%, yang seluruhnya termasuk dalam kategori sangat baik. Penelitian ini menghasilkan sistem yang mengintegrasikan pelaporan kerusakan dan pemantauan utilitas dalam satu platform sehingga mendukung proses pengelolaan fasilitas gedung secara lebih terstruktur.

Kata kunci**:** *black box testing*, pelaporan kerusakan, pemantauan utilitas, *rapid application development*, *user acceptance testing*.

ABSTRACT

The Field Research Center (FRC) building of the Vocational School, Universitas Gadjah Mada (UGM), is a facility designed based on the green building concept and operates under the supervision of the Japan International Cooperation Agency (JICA) and UGM. The building is managed by five staff members and receives an average of 10 to 15 damage reports each month. However, the reporting process is still carried out manually through WhatsApp and spreadsheets, resulting in response times of up to one to two weeks. This condition leads to several issues, including delays in record-keeping, the risk of data loss, the absence of access control, and difficulties in monitoring and tracking maintenance history.

This study aims to design and develop a web-based information system for building damage reporting and utility monitoring at the FRC of the Vocational School, UGM, using the Rapid Application Development (RAD) method. Data were collected through observation, structured interviews, and literature review. Problem analysis was conducted using the PIECES framework, while system modeling employed the Unified Modeling Language (UML). The system was developed using the Laravel framework with a MySQL database through three iterations of prototyping and design review involving end users.

The resulting system integrates damage reporting, technician assignment, repair status monitoring, and building utility data recording into a single web-based platform with four user roles: reporter, administrator, technician, and FRC manager. Black Box Testing demonstrated that all 10 functional test scenarios operated according to the specified requirements. Furthermore, User Acceptance Testing (UAT) involving five respondents achieved an overall average score of 95.25%, consisting of 95% for system functionality, 96% for system performance, 94% for user interface, and 96% for efficiency and productivity, all of which were categorized as very good. This study produces an integrated information system that combines damage reporting and utility monitoring within a single platform, thereby supporting a more structured building facility management process.

*Keywords**:** Black Box Testing, Damage Reporting, Rapid Application Development, User Acceptance Testing, Utility Monitoring.*