ABSTRACT

Telkom University's current Open Library digital services, built using the CodeIgniter 3 framework, face significant challenges related to outdated technology and poor code quality, which hinder maintainability and scalability. This research aims to migrate two crucial services, OLAFA and Procurement, to the Laravel framework, focusing on implementing code quality principles to produce a system that is architecturally more maintainable, as well as quantitatively more efficient and resilient. The development process applied an Iterative and Incremental methodology, which included an analysis of the legacy system, architectural redesign using the Service Repository Pattern, code rewriting, and concluded with comparative performance testing. Performance testing was conducted using the k6 tool with two different scenarios a Load Test on the OLAFA service to measure efficiency, and a Stress Test on the Procurement service to measure resilience. The conclusion of this research proves that the new Laravel-based system was successfully migrated and demonstrates more efficient performance in handling complex read-heavy processes. More importantly, the tests prove the new architecture is fundamentally more resilient and stable under user load, unlike the legacy system, which was more fragile despite showing faster responses on single, lightweight transactions.

Keywords: System Migration, Laravel, Code Quality, Performance Testing, Legacy System, Software Architecture.