

ABSTRACT

Manual reservation systems in healthcare clinics often lead to operational issues such as unpredictable waiting times, high administrative workload, and patient uncertainty regarding service time estimation. This study aims to design and implement a web-based reservation management system capable of optimizing queue management, minimizing waiting times, and enhancing transparency of service information.

The system development was based on needs analysis, government regulations, and best practices in healthcare facilities. It supports three categories of users: admin, doctor, and patient with key features including digital reservation management, real-time waiting time estimation using queuing theory with Poisson distribution, automated WhatsApp notifications, doctor schedule management, and integrated medical record documentation. The system was implemented using the Laravel framework (backend), Bootstrap (frontend), and MySQL (database) with a Model-View-Controller (MVC) architecture.

Testing was conducted in three phases: alpha testing (black box) showing that all functions operated 100% according to specifications, beta testing involving 30 respondents with an average satisfaction score of 86.36% (*very good*), and User Acceptance Testing (UAT) at Klinik Pratama Hadiana Sehat achieving 100% acceptance for all main functions. These results demonstrate that the system effectively reduces administrative workload, provides accurate service time estimates, and enables patients to monitor reservation status and receive real-time notifications.

Keywords — Clinic, Laravel, Reservation Management, Information System, Website