

ABSTRAK

Anggita Tri Cahya Ningrum. 2026. Implementasi *Rule-Based System* untuk Otomatisasi Surat Masuk dan Surat Keluar Berbasis *Website* (Studi Kasus pada Kantor Dinas PUPR Kab. Madiun). *Skripsi*. Program Studi Teknik Informatika, Fakultas Teknik, Universitas PGRI Madiun. Pembimbing (I) Sri Anardani, S.Kom., M.T. (II) Sekreningsih Nita, S.Kom., M.T.

Pengelolaan surat masuk dan surat keluar merupakan bagian penting dalam kegiatan administrasi instansi pemerintahan. Pada Dinas Pekerjaan Umum dan Penataan Ruang Kabupaten Madiun, proses pengelolaan surat masih dilakukan secara manual atau semi-manual sehingga dapat menimbulkan kendala, seperti kesalahan pencatatan, duplikasi nomor surat, kesulitan pencarian arsip, dan ketidaksesuaian urutan penomoran surat. Kondisi tersebut menunjukkan perlunya sistem yang mampu membantu proses administrasi surat agar lebih terstruktur, cepat, dan terdokumentasi. Penelitian ini bertujuan untuk merancang dan membangun sistem otomatisasi surat masuk dan surat keluar berbasis *website*, mengimplementasikan *rule-based system* dalam proses otomatisasi penomoran dan penyusunan surat keluar, serta mengetahui hasil pengujian sistem menggunakan metode *Blackbox Testing*. Sistem dikembangkan untuk mendukung pencatatan surat masuk, pembuatan surat keluar, pencarian arsip, rekap surat, *generate PDF*, serta pembagian hak akses pengguna. Metode pengembangan sistem yang digunakan adalah *Waterfall*, yang meliputi analisis kebutuhan, perancangan, implementasi, pengujian, dan pemeliharaan. Sistem dibangun berbasis *website* menggunakan *CodeIgniter 4*, PHP, dan MySQL. *Rule-based system* diterapkan untuk menentukan format penomoran surat keluar secara otomatis berdasarkan aturan instansi. Hasil penelitian menunjukkan bahwa sistem berhasil dibangun dan fitur utama berjalan sesuai kebutuhan pengguna. Sistem mampu mengelola surat masuk, surat keluar, rekap surat, *generate PDF*, nomor surat otomatis, serta hak akses admin, staff, dan pimpinan. Hasil *Blackbox Testing* menunjukkan seluruh fitur yang diuji berjalan sesuai harapan. Dengan demikian, sistem ini dapat membantu administrasi surat menjadi lebih cepat, rapi, terstruktur, dan terdokumentasi.

Kata kunci: *Blackbox Testing*, *Rule-Based System*, surat keluar, surat masuk, *Website*.

ABSTRACT

Anggita Tri Cahya Ningrum. 2026. *Implementation of a Rule-Based System for Website-Based Automation of Incoming and Outgoing Letters (A Case Study at the Public Works and Spatial Planning Office of Madiun Regency)*. Undergraduate Thesis. Informatics Engineering Study Program, Faculty of Engineering, Universitas PGRI Madiun. Advisors: (I) Sri Anardani, S.Kom., M.T. (II) Sekreningsih Nita, S.Kom., M.T.

The management of incoming and outgoing letters is an important part of administrative activities in government institutions. At the Public Works and Spatial Planning Office of Madiun Regency, letter management is still carried out manually or semi-manually, which may cause several problems, such as recording errors, duplicated letter numbers, difficulties in searching archives, and inconsistencies in letter numbering sequences. These conditions indicate the need for a system that can support letter administration processes to become more structured, faster, and well documented. This study aims to design and develop a website-based automation system for incoming and outgoing letters, implement a rule-based system in the automation of numbering and composing outgoing letters, and determine the system testing results using the Blackbox Testing method. The system was developed to support incoming letter recording, outgoing letter creation, archive searching, letter recapitulation, PDF generation, and user access control. The system development method used in this study is the Waterfall method, which consists of requirements analysis, design, implementation, testing, and maintenance. The system was developed as a website-based application using CodeIgniter 4, PHP, and MySQL. The rule-based system was implemented to automatically determine the outgoing letter numbering format based on institutional rules. The results of this study show that the system was successfully developed and that its main features work according to user needs. The system is able to manage incoming letters, outgoing letters, letter recapitulation, PDF generation, automatic letter numbering, and access rights for admin, staff, and leaders. The results of Blackbox Testing show that all tested features run as expected. Therefore, this system can help letter administration become faster, neater, more structured, and well documented.

Keywords: Blackbox Testing, rule-based system, outgoing letters, incoming letters, website.