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Readiness Evaluation of the eSKoPpi Application for Electronic Correspondence Management System Development at DISKOMINFO Malang City

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ABSTRACT

Digital transformation in public sector organizations requires effective information systems to improve administrative efficiency and service quality. The Communication and Informatics Office (DISKOMINFO) of Malang City has developed eSKoPpi (Electronic System for Innovative Public Service Competition), a web-based application that provides structured workflows, role-based access control, and comprehensive system documentation. However, it does not support essential electronic correspondence management functions, including letter registration, electronic disposition, digital archiving, and document tracking. This study evaluates the readiness of eSKoPpi for further development into an Electronic Correspondence Management System. A qualitative case study approach was employed using document analysis, direct observation, and semi-structured interviews. The evaluation focused on documentation completeness, workflow suitability, role-based access control, document management capability, and organizational readiness. The results indicate that eSKoPpi provides a strong technical foundation through comprehensive documentation and an established role-based access control mechanism. Nevertheless, several correspondence-specific functionalities remain unavailable. To address these gaps, BPMN-based business process models, UML use case models, and user interface prototypes were developed. The findings demonstrate that eSKoPpi is technically ready for future enhancement and can support digital transformation initiatives in local government administration.

INTRODUCTION

Digital transformation has become a strategic priority for public sector organizations worldwide, including local government institutions in Indonesia. The implementation of information and communication technology in government administration supports the realization of efficient, transparent, and accountable public services (Kementerian Pendayagunaan Aparatur Negara dan Reformasi Birokrasi, 2022; Hadi & Widnyani, 2024). In line with Indonesia's Electronic-Based Government System (SPBE) initiative, government agencies are encouraged to adopt digital technologies that improve administrative processes, service quality, transparency, and accountability. One important aspect of this transformation is the management of organizational documents and official correspondence through integrated information systems.

Electronic correspondence management systems are widely recognized as effective tools for improving document accessibility, reducing processing time, supporting traceability, and minimizing the inefficiencies associated with conventional paper-based administration (Bizi et al.,

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2024; Terlizzi, 2021). Effective document management enables organizations to maintain accurate records, facilitate communication, and support decision-making processes. In government institutions, digital correspondence systems also contribute to transparency, accountability, and regulatory compliance.

Previous studies have emphasized the importance of information systems and electronic document management in supporting digital transformation within the public sector (Escobar et al., 2023; Haug et al., 2024; Novianto, 2023). Well-documented systems facilitate software maintenance, system enhancement, and organizational adaptation to changing operational requirements (Pressman & Maxim, 2014). Furthermore, role-based information systems improve secure access control, document traceability, and workflow management within public organizations (de Carvalho Junior & Bandiera-Paiva, 2018; Hachicha et al., 2015).

The Communication and Informatics Office (DISKOMINFO) of Malang City **has developed** eSKoPpi (Electronic System for Innovative Public Service Competition), a web-based application designed to support the management of public service innovation competitions. The system provides functionalities for proposal submission, proposal evaluation, and publication of competition results.

Although the application was originally developed to support public service innovation management, an analysis of its available system documentation—including use case diagrams, sequence diagrams, user scenarios, authentication mechanisms, role-based access control, and documented business processes—shows that the existing architecture already contains several core components commonly required for an electronic correspondence management system. These findings suggest that the application can be extended by incorporating correspondence-specific modules without requiring a complete redesign of the existing architecture.

Consequently, evaluating the readiness of the existing architecture prior to implementing additional correspondence management modules is essential for minimizing redevelopment efforts and optimizing the utilization of existing system resources.

Despite these existing capabilities, no previous study has evaluated whether the current eSKoPpi architecture is sufficiently prepared to support an electronic correspondence management system. Moreover, no formal assessment has been conducted to determine which existing modules can be reused and which additional functionalities are required before system implementation. Therefore, a readiness evaluation is required before further system development is undertaken. This evaluation focuses on assessing system functionality, documentation completeness, organizational requirements, and role-based access control to determine the feasibility of extending the existing application.

Nevertheless, a preliminary review of the available documentation indicates that the existing architecture already provides user authentication, role-based access control, document submission processes, and workflow monitoring mechanisms. However, several essential functionalities required for an electronic correspondence management system remain unavailable, including incoming and outgoing letter registration, disposition management, digital archiving, and document tracking. This gap creates an opportunity to assess the readiness of the existing system and formulate recommendations for future development.

Based on these considerations, this study aims to evaluate the readiness of the existing eSKoPpi application to support the development of an electronic correspondence documentation system at DISKOMINFO Malang City by assessing system functionalities, documentation completeness, organizational requirements, and role-based access control to identify opportunities for further system enhancement.

The findings of this study are expected to provide practical recommendations for DISKOMINFO Malang City regarding future system development. Furthermore, this study contributes to the growing body of knowledge by providing empirical evidence regarding the readiness of existing government information systems to support electronic correspondence management through system extension rather than complete system redevelopment.

RESEARCH METHODS

This study employed a qualitative descriptive approach with a case study design to evaluate the readiness of the existing eSKoPpi application to support an Electronic Correspondence Management System at the Communication and Informatics Office (DISKOMINFO) of Malang City. The readiness evaluation focused on five evaluation aspects: (1) documentation completeness, (2) workflow suitability, (3) role-based access control, (4) document management capability, and (5) organizational readiness. A case study approach was selected because it enables an in-depth evaluation of existing system functionalities, organizational requirements, and administrative workflows within a real organizational setting.

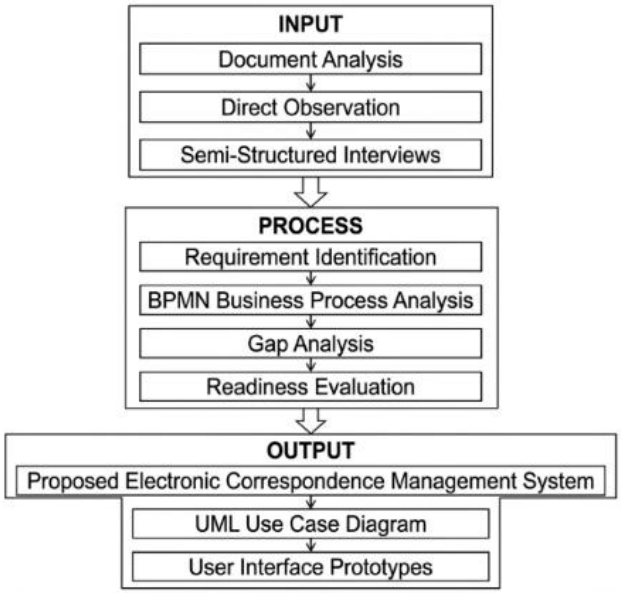

Figure 1. Research Framework

Figure 1 illustrates the overall research framework employed in this study. The research began with document analysis, direct observation, and semi-structured interviews to identify the existing system functionalities, business processes, and organizational requirements. The collected data were subsequently analyzed through BPMN-based business process modeling and qualitative gap analysis to evaluate the readiness of the existing eSKoPpi application. Based on the identified functional gaps, a proposed Electronic Correspondence Management System was designed, including UML use case models and user interface prototypes.

Following the research framework presented in Figure 1, the collected data were analyzed through BPMN-based business process modeling and qualitative gap analysis. Existing system functionalities were systematically compared with the functional requirements derived from the literature and Indonesian digital government guidelines (Pressman & Maxim, 2014; Haug et al., 2024). The comparison results were summarized in a readiness matrix, in which each functional component was classified as Ready, Partially Available, or Needs Development.

The object of the study was the eSKoPpi (Electronic System for Innovative Public Service Competition) application, a web-based information system developed by DISKOMINFO Malang City. The evaluation examined the application's architecture, business processes, user roles, and supporting documentation to determine the feasibility of extending the application to support **an** electronic correspondence management system.

Data were collected through document analysis, direct observation, and semi-structured interviews. Document analysis examined use case diagrams, sequence diagrams, user scenarios, and technical documentation, while observations and interviews were used to validate business processes, user roles, and correspondence management requirements.

The five evaluation aspects were adapted from software engineering principles (Pressman & Maxim, 2014), electronic records management literature (Bizi et al., 2024), and digital government implementation frameworks (Haug et al., 2024).

The collected data were analyzed using qualitative content analysis. Data obtained from document analysis, observations, and interviews were coded into five evaluation categories: system functionality, business process support, user access management, documentation quality, and correspondence management readiness. Existing system functionalities were mapped to the functional requirements of an electronic correspondence management system, including incoming and outgoing letter registration, electronic disposition processing, digital archiving, document retrieval, and reporting. This analysis identified functional gaps, system strengths, limitations, and opportunities for further enhancement.

System requirements were identified using requirement elicitation techniques through document analysis, direct observation, and semi-structured interviews. Functional requirements were extracted from existing business processes, while non-functional requirements were identified based on security, accessibility, usability, and document management requirements reported by system users. The identified requirements were subsequently validated by comparing them with the literature on electronic correspondence management systems and relevant Indonesian government digital administration guidelines.

To improve the credibility of the findings, the evaluation results were validated through structured expert review involving two system administrators and one institutional stakeholder from DISKOMINFO Malang City. Structured review sessions were conducted **to examine** the identified system requirements and proposed enhancement recommendations. The reviewers assessed the completeness of the identified requirements, the consistency of the gap analysis, and the feasibility of the proposed system enhancement. Feedback obtained during the review process was used to refine the evaluation results until consensus regarding system readiness and development priorities was achieved.

This validation process ensured that the proposed recommendations were consistent with organizational needs and aligned with current digital transformation initiatives within local government administration. Overall, the methodological framework provided a comprehensive basis for evaluating both the technical readiness of the existing application and its suitability for future extension into an electronic correspondence management system.

RESULTS AND DISCUSSION

This section presents the results of the readiness evaluation of the existing eSKoPpi application and discusses its potential to support the development of an Electronic Correspondence Management System at DISKOMINFO Malang City. The evaluation is organized into several aspects, including existing system documentation, system functionality, role-based access control, business process suitability, and the readiness gap analysis. The discussion also compares the findings with previous studies and software engineering principles to identify development priorities and opportunities for future system enhancement.

Readiness Evaluation of the Existing eSKoPpi Application

The evaluation of the eSKoPpi application was conducted by examining the available system documentation, including use case diagrams, sequence diagrams, user scenarios, and supporting technical documents. The analysis indicates that the system has been developed using a structured approach and provides clear descriptions of user interactions, business processes, and functional requirements.

The available documentation demonstrates consistency between system workflows, user responsibilities, and implemented system functionalities. Comprehensive documentation facilitates software maintenance, modification, integration, and future system enhancement (Pressman & Maxim, 2014).

The evaluated components were identified through document analysis of the available eSKoPpi software engineering artifacts. These components represent the major architectural and functional elements currently implemented within the application and were selected because they directly influence the feasibility of extending the system to support electronic correspondence management. Each component was evaluated based on its contribution to future correspondence management functions, including document registration, disposition processing, digital archiving, workflow control, and secure user access.

Table 1 summarizes the readiness evaluation of the major system components identified during document analysis. The assessment criteria were adapted from software engineering principles (Pressman & Maxim, 2014) and electronic records management frameworks (Bizi et al., 2024).

In this study, **"Adequate"** indicates that a component has been fully implemented and can be directly reused or adapted to support electronic correspondence management with minimal modification. Conversely, **"Needs Enhancement"** indicates that the component is unavailable or insufficient to support correspondence management and therefore requires additional development before implementation.

Table 1. Readiness Evaluation of Existing eSKoPpi System Components for Electronic Correspondence Management

Component	Existing Condition	Potential Contribution to Correspondence Management	Readiness
Use Case Documentation	Complete	Reusable for modeling correspondence workflows	Adequate
Sequence Diagram	Complete	Supports workflow redesign and interaction modeling	Adequate
User Scenario	Complete	Provides business process reference	Adequate
Authentication	Implemented	Enables secure user authentication	Adequate
Role-Based Access Control	Implemented	Supports authorization and access management	Adequate
Correspondence Management Module	Not Available	Requires development of correspondence-specific functions	Needs Enhancement

As shown in Table 1, most of the core architectural components required for system extension are already available in the existing eSKoPpi application. The availability of comprehensive documentation, authentication mechanisms, and role-based access control provides a solid technical foundation for future enhancement. However, the absence of a dedicated correspondence management module indicates that additional development is required before the application can fully support electronic correspondence management. These findings are consistent with Pressman and Maxim (2014), who emphasized that comprehensive documentation facilitates software maintenance and system evolution. Similar findings were also reported by Yanti et al. (2024), demonstrating that well-documented government information systems improve readiness for future functional expansion.

Role-Based Access Control (RBAC) Analysis

The analysis of system workflows identified three primary user roles within the existing eSKoPpi application: Administrator, Regional Agency Representative, and Evaluator. Each role performs specific responsibilities under the implemented role-based access control (RBAC) mechanism. The evaluation examined whether these roles and their associated permissions provide an adequate foundation for future electronic correspondence management.

The RBAC mechanism was evaluated by analyzing user permissions, responsibilities, and workflow interactions documented in the use case diagrams, user scenarios, and authentication mechanisms.

Table 2 summarizes the evaluation of the existing user roles. The assessment criteria were adapted from RBAC principles proposed by de Carvalho Junior and Bandiera-Paiva (2018) and Hachicha et al. (2015). User roles were classified according to the completeness of their assigned responsibilities and their capability to support organizational workflows.

In this study, "Comprehensive" indicates that a user role encompasses complete operational responsibilities and system privileges required to support multiple administrative functions within the application. "Adequate" indicates that the assigned responsibilities sufficiently support the intended operational tasks but may require additional permissions or functionalities to accommodate future electronic correspondence management processes.

Table 2. Readiness Evaluation of Existing User Roles and Access Control in eSKoPpi

User Role	Existing Responsibilities	Potential Support for Correspondence Management	Assessment
Administrator	User management, proposal verification, ranking management	**Can be extended to manage correspondence administration and user authorization**	Comprehensive
Regional Agency Representative	Proposal submission, profile management	**Can be extended to support correspondence submission but requires additional permissions**	Adequate
Evaluator	Proposal assessment, voting	**Can support document review but lacks correspondence management privileges**	Adequate

As presented in Table 2, the existing RBAC implementation clearly separates operational responsibilities among system users. The Administrator role was classified as Comprehensive because it possesses the broadest set of system privileges and is responsible for core administrative functions, including user management, proposal verification, and ranking management. In contrast, the Regional Agency Representative and Evaluator roles were classified as Adequate because their responsibilities are limited to specific operational activities and may require additional permissions if electronic correspondence management functionalities are introduced. Neither role currently includes responsibilities related to correspondence registration, document disposition, archive management, or official document approval, which are essential functions of an electronic correspondence management system.

As presented in Table 2, the existing RBAC implementation clearly separates operational responsibilities among system users. The Administrator role was classified as Comprehensive because it possesses the broadest administrative privileges, whereas the Regional Agency Representative and Evaluator roles were classified as Adequate due to their limited operational responsibilities. Although the existing RBAC structure provides a solid foundation for secure system operation, additional permissions are required to support correspondence-specific activities such as document registration, disposition management, archive management, and document tracking. These findings are consistent with de Carvalho Junior and Bandiera-Paiva (2018), who emphasized that RBAC improves organizational security by restricting user privileges according to operational responsibilities. Similar observations were reported by Hachicha et al. (2015), who found that well-defined RBAC structures enhance workflow management, accountability, and information security.

Gap Analysis and Proposed System Enhancement

To evaluate the readiness of the existing eSKoPpi application for supporting an electronic correspondence management system, a gap analysis was conducted by comparing the existing system functionalities with correspondence management requirements identified from document analysis, observations, stakeholder interviews, and relevant literature (Pressman & Maxim, 2014; Bizi et al., 2024; Haug et al., 2024). Existing and proposed business processes were subsequently

modeled using Business Process Model and Notation (BPMN) to visualize workflow differences and identify functional gaps.

Business Process Analysis of Electronic Correspondence

Figure 2 illustrates the existing eSKoPpi workflow, which primarily supports proposal submission, verification, evaluation, and ranking activities. Correspondence-specific processes, including letter registration, electronic disposition, document tracking, and archive management, are not supported. These missing processes provide the basis for the proposed workflow presented in Figure 3.

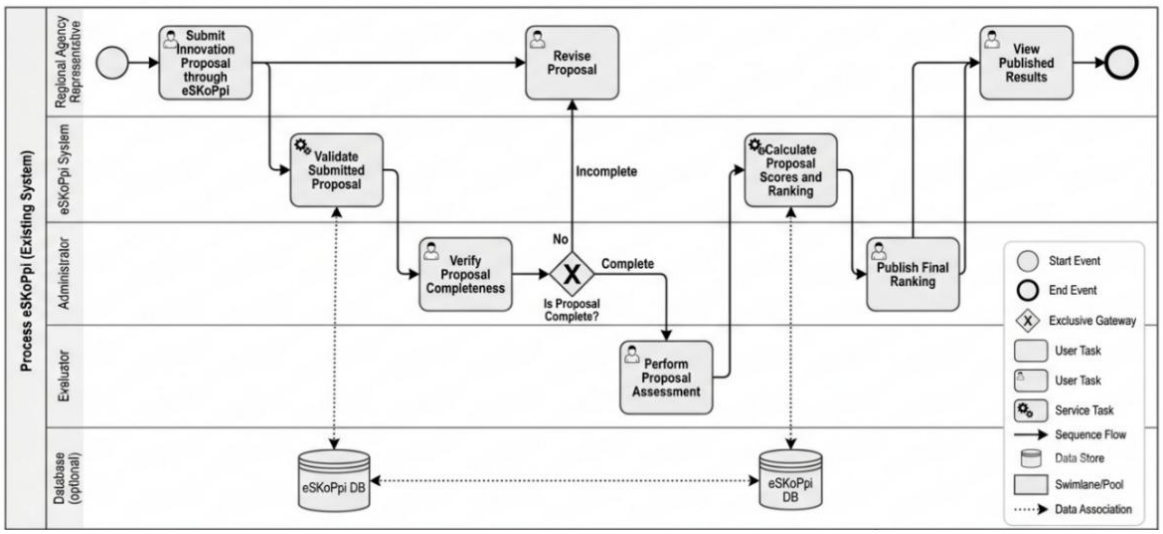

Figure 2. Existing Business Process of the eSKoPpi Application

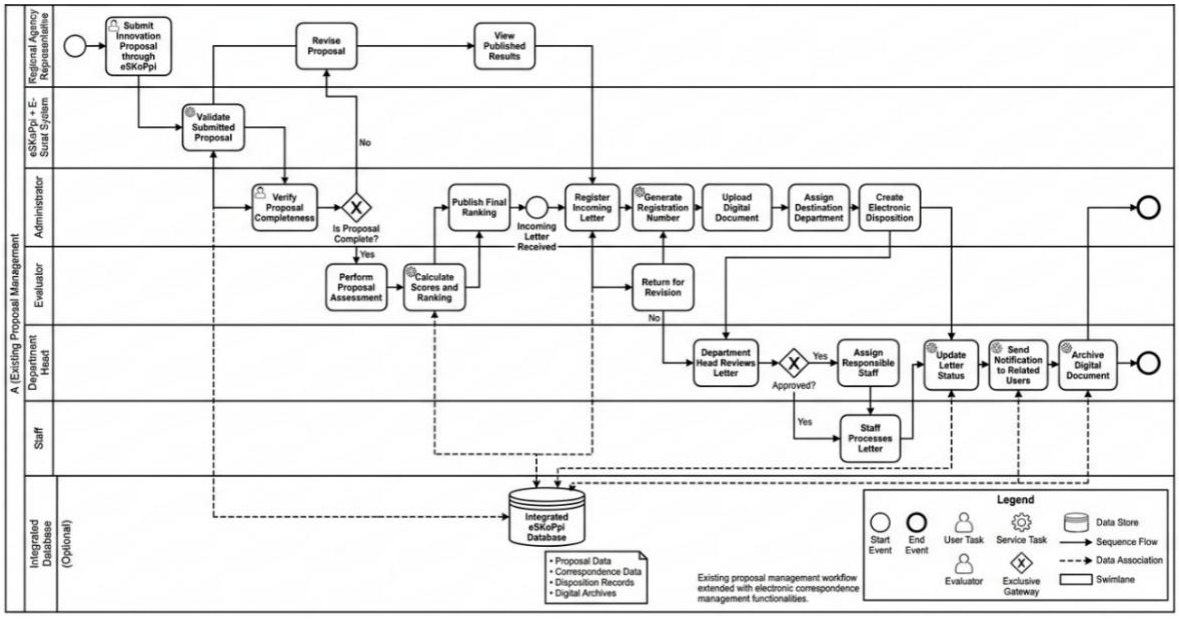

Figure 3. Proposed Business Process for the Electronic Correspondence Management System

Figure 3 presents the proposed business process by integrating correspondence management functionalities, including incoming and outgoing letter registration, electronic disposition, document tracking, digital archiving, and notification services. Compared with the existing workflow, these additional processes address the identified functional gaps and form the basis for the gap analysis summarized in Table 3.

Table 3. Gap Analysis of Existing eSKoPpi Functionalities Against Electronic Correspondence Management Requirements

Functional Requirement	Source of Requirement	Existing Availability	Gap Status
User Authentication	Existing System	Available	Ready
Role-Based Access Control	Existing System	Available	Ready
Incoming Letter Registration	BPMN Analysis & Observation	Not Available	Needs Development
Outgoing Letter Registration	BPMN Analysis & Observation	Not Available	Needs Development
Electronic Disposition	BPMN Analysis & Observation	Not Available	Needs Development
Digital Archive Management	Literature & BPMN Analysis	Not Available	Needs Development
Document Tracking	Literature & BPMN Analysis	Not Available	Needs Development
Notification Service	Literature	Not Available	Needs Development

As presented in Table 3, only user authentication and role-based access control are currently available because these functionalities have already been implemented within the existing eSKoPpi application. In contrast, the remaining functional requirements were classified as "Needs Development" because they were not identified during document analysis, direct observation, or stakeholder interviews, despite being essential components of an electronic correspondence management workflow. Therefore, these functionalities represent the primary development priorities for extending the application.

The identified gaps indicate that the current system requires additional correspondence-specific functionalities before full implementation can be achieved. Similar challenges were reported by Bizi et al. (2024), who found that electronic records management systems often require additional modules for document classification, tracking, and archival management. Likewise, Escobar et al. (2023) emphasized that successful digital transformation initiatives depend not only on technological infrastructure but also on the availability of business process-oriented functionalities.

The gap analysis demonstrates that, although the existing eSKoPpi application provides an adequate technical foundation through its authentication mechanism, role-based access control, and system architecture, several correspondence-specific modules must be developed before the application can fully support electronic correspondence management. These findings provide the justification for designing the proposed Electronic Correspondence Management System presented in the following section.

Proposed Electronic Correspondence Management System

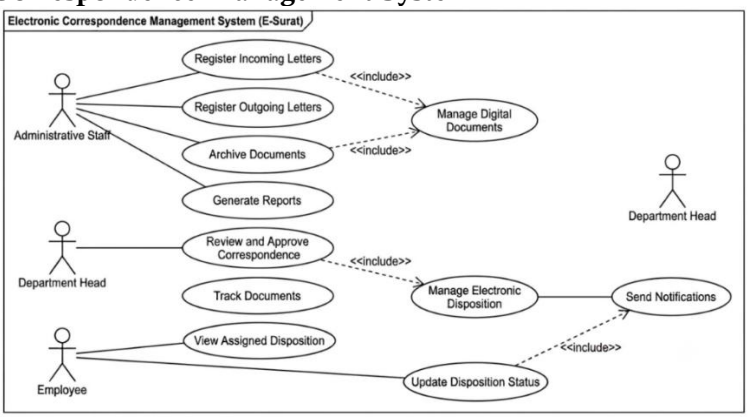

Figure 4. UML Use Case Diagram of the Proposed Electronic Correspondence Management System (E-Surat)

Based on the evaluation results and the identified functional gaps, a proposed **Electronic Correspondence Management System (E-Surat)** was designed. The proposed system extends the existing capabilities of the eSKoPpi application by incorporating electronic correspondence management functionalities while preserving the role-based access control (RBAC) mechanism already implemented in the existing system.

Figure 4 presents the UML use case diagram of the proposed Electronic Correspondence Management System (E-Surat). The model illustrates the interactions among three primary actors—Administrative Staff, Department Head, and Employee—and integrates the correspondence management functionalities identified during the readiness evaluation, including incoming and outgoing letter registration, electronic disposition, document tracking, digital archiving, notification services, and report generation. By extending the existing authentication and role-based access control mechanisms, the proposed model addresses the functional gaps identified in Table 3 while supporting efficient and accountable electronic correspondence management.

Proposed User Interface Prototypes

To complement the proposed Electronic Correspondence Management System, several user interface prototypes were designed based on the functional requirements identified during the readiness evaluation.

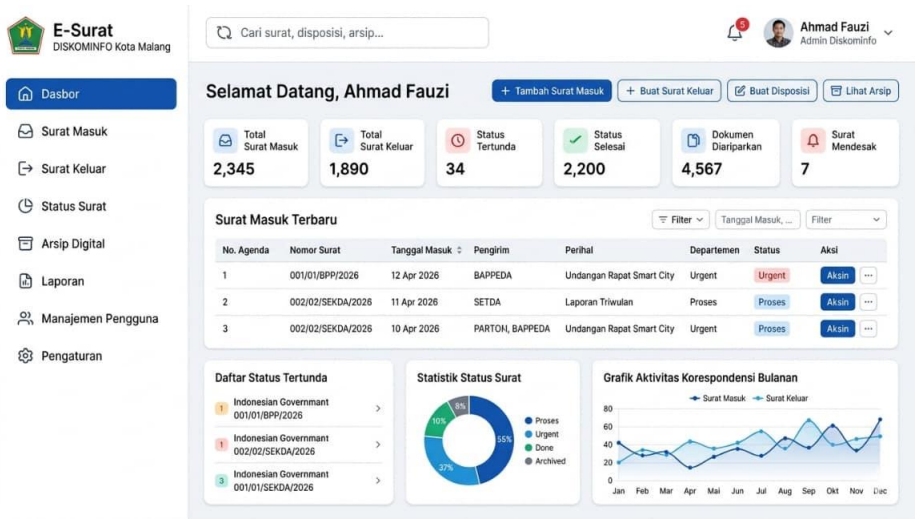

Figure 5. Proposed Correspondence Dashboard

Figure 5 illustrates the proposed correspondence dashboard, providing centralized access to incoming letters, outgoing letters, disposition status, archives, and administrative statistics to support efficient correspondence management.

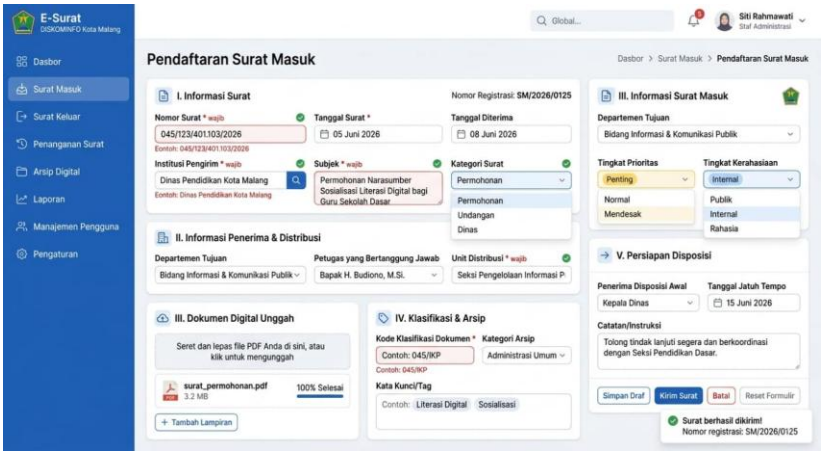

Figure 6. Proposed Incoming Letter Registration Interface

Figure 6 illustrates the proposed incoming letter registration interface, enabling administrative staff to register incoming correspondence, upload digital documents, assign document classifications, and initiate the electronic disposition process through a structured data entry form.

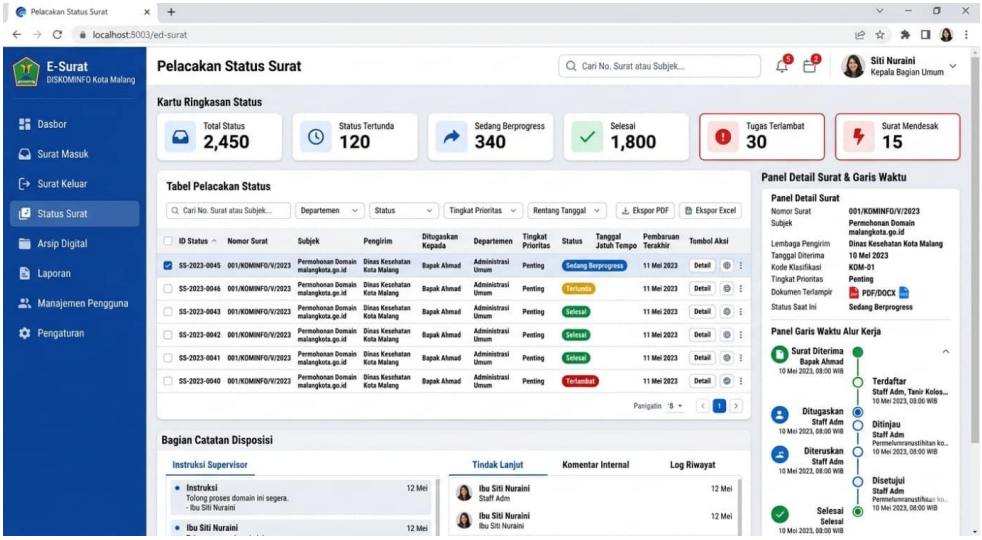

Figure 7. Proposed Letter Disposition Tracking Interface

Figure 7 presents the proposed disposition tracking interface, allowing users to monitor disposition progress, update document status, and review correspondence history to improve workflow transparency and document traceability.

The proposed user interface prototypes were developed based on the organizational requirements identified during the readiness evaluation and the functional gaps revealed through the BPMN analysis and UML use case modeling. Together, the dashboard, correspondence registration interface, and disposition tracking interface demonstrate how the proposed correspondence management workflow can be implemented while remaining consistent with the existing role-based access control mechanism.

The interface design emphasizes clear navigation, structured data entry, and centralized information presentation, following user-centered interface design principles (Nielsen Norman Group, 2020). Since this study focuses on system readiness evaluation and conceptual design, the proposed interfaces were not implemented or evaluated through User Acceptance Testing (UAT). Therefore, they should be regarded as conceptual references for future system development. Future research should implement the proposed system and evaluate its usability, user acceptance, and operational effectiveness using User Acceptance Testing (UAT), the System Usability Scale (SUS), or other established usability evaluation methods.

Future research should focus on implementing the proposed Electronic Correspondence Management System and evaluating its usability, user acceptance, and operational effectiveness using User Acceptance Testing (UAT), the System Usability Scale (SUS), or other established usability evaluation methods.

CONCLUSION

This study evaluated the readiness of the eSKoPpi application for supporting the development of an Electronic Correspondence Management System at the Communication and Informatics Office (DISKOMINFO) of Malang City. The results indicate that the existing application provides a strong foundation for future system enhancement through its comprehensive system documentation, structured business processes, and established role-based access control mechanism. However, the evaluation also identified several functional gaps,

including the absence of incoming and outgoing letter registration, electronic disposition, digital archiving, document tracking, document classification, and notification services. To address these gaps, this study proposed an Electronic Correspondence Management System (E-Surat) comprising redesigned business processes, UML use case models, and user interface prototypes that provide a conceptual foundation for future system development and support digital transformation within local government administration.

This study has several limitations. First, it focused on evaluating system readiness and developing a conceptual system design without implementing the proposed solution. Consequently, the proposed system was not validated through empirical testing or user evaluation. Second, the study was conducted within a single government institution, which may limit the generalizability of the findings. In addition, usability and user acceptance evaluations, including User Acceptance Testing (UAT) and the System Usability Scale (SUS), were beyond the scope of this research.

Future research should implement the proposed Electronic Correspondence Management System and evaluate its usability, user acceptance, and operational performance using User Acceptance Testing (UAT), the System Usability Scale (SUS), or other established evaluation methods. Comparative studies involving multiple government institutions are also recommended to assess the broader applicability and effectiveness of the proposed approach

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