

## PUBLIC INFORMATION AND DOCUMENTATION MANAGEMENT INFORMATION SYSTEM: A CASE STUDY OF THE TEGAL CITY PPID

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**Abstract**—Information and documentation management at the Public Information and Documentation Management Office of Tegal City faces operational challenges due to reliance on manual mechanisms for collecting files from 73 Regional Government Agencies. The main obstacles identified include slow recapitulation processes reaching four weeks, high potential for damage or loss of physical archives, and difficulty in monitoring submission status in real-time. This research aims to develop a web-based information platform to optimize public document governance for improving efficiency and data security. The development method uses the Waterfall model covering requirements analysis, system and data design, coding, testing, and maintenance phases. The design refers to literature studies regarding successful implementation of electronic government and web-based digital archives in enhancing public service effectiveness. System modeling uses Unified Modeling Language to visualize functions and data structures. Research results produce a system that integrates workflow between Regional Government Agencies and the Public Information and Documentation Management Office. The system facilitates operators in uploading digital files independently and enables administrators to perform centralized verification. The monitoring dashboard feature allows leadership to monitor document submission compliance levels instantly, minimize data loss risks, and accelerate public information dissemination.

**Keywords:** Information System, Public Information and Documentation Management Office, Waterfall, Public Documentation, Web Application

**Abstract**—Information and documentation management in the Tegal City Information and

Documentation Management Officer faces operational challenges due to reliance on manual mechanisms in collecting files from 73 Regional Apparatus Organizations. The main obstacles identified include the slow recapitulation process which reaches four weeks, the high potential for damage or loss of physical archives, and the difficulty of monitoring the status of submissions directly. This research aims to develop a web-based information platform to optimize public document governance to improve data efficiency and security. The development method uses the Waterfall model which includes the stages of needs analysis, system and data design, coding, testing, and maintenance. The design refers to a literature review on the successful implementation of electronic government and web-based digital archives in improving the effectiveness of public services. Systems modeling uses the Unified Modeling Language to visualize data functions and structures. The results of the research resulted in a system that integrates the workflow between the Regional Apparatus Organization and the Information and Documentation Management Officer. The system facilitates operators to upload digital files independently and allows administrators to perform centralized verification. The dashboard monitoring feature allows leaders to monitor the level of compliance of document submission instantly, minimize the risk of data loss, and accelerate the dissemination of public information.

**Keywords:** Information Systems, Information and Documentation Management Officers, Waterfall, Public Documentation, Web Applications

### INTRODUCTION

Public information disclosure is a basic right of the community guaranteed by laws and regulations, as stated in Law Number 14 of 2008 concerning Public Information Disclosure (Pemerintah Indonesia, 2008). In order to fulfill the mandate of the regulation, each local government is obliged to appoint an Information and Documentation Management Officer who is in charge of coordinating the collection, documentation, storage, and service of public information so that it can be accessed by the public in a transparent and accountable manner (Komisi Informasi Pusat, 2021). However, in practice at the regional level, the management of public information and documentation still faces significant operational challenges. A case study on the Tegal City Information and Documentation Management Officer revealed that the entire document management workflow from 73 Regional Apparatus Organizations is still completely dependent on a physical file-based system, resulting in inefficiencies in the recapitulation process, high potential for damage or loss of archives due to unstructured management, as well as obstacles in the process of publication and dissemination of information that require digitization stages manually (Pemerintah Kota Tegal, 2017). This condition simultaneously also makes it difficult for the administration to monitor the compliance status of the submission of documents from each regional apparatus organization comprehensively and periodically (Nagrama, Lingating, Calleno, Rato, Catungal, & Encarnacion, 2024).

Departing from the problems that have been identified, this study is intended to answer the fundamental question of how to design and build an integrated web-based information system to transform the document management process at the Tegal City Information and Documentation Management Officer from manual to digital mechanisms, so as to be able to improve the efficiency of document collection and recapitulation from 73 regional apparatus organizations, Minimize the risk of damage to physical archives through electronic database-based storage, while providing an automatic and real-time document monitoring mechanism. This research aims to produce a system that can support the administrative operations of Information and Documentation Management Officials more effectively, efficiently, and measurably in order to meet the public information service standards set by applicable regulations.

From the point of view of literature review, several previous studies have discussed efforts to digitize archive management and information services in the government environment. Shirley (2022) develop a web-based portal to allow the

public to apply for information online to the Communication and Information Service, while Stuart et al. (2025) successfully built a digital filing system for incoming and outgoing letter documents within the Population Office. On the other hand, Shavira et al. (2022) Produce a performance monitoring dashboard system for government agencies that shows the relevance of monitoring features in government data management, and Elvina et al. (2023) implement a digital archiving system within the District Attorney's Office. Research by Rizki et al. (2023) and Maylina et al. (2024) It also shows the importance of digitizing archives to prevent damage to physical documents and improve the efficiency of information management. Although these studies have contributed to the field of digital information archiving and services, there is a gap in the study of systems that specifically handle the workflow of collecting, verifying, and monitoring compliance of public documents from a large number of regional apparatus organizations to a single centralized management unit, so that this research has significant novelty and relevance in efforts to develop information systems in the environment Local Government (Saputra, 2023).

## MATERIALS AND METHODS

This study uses a research design for the development of a system based on a structured sequential model, namely the Waterfall method, which includes the stages of needs analysis, design, code implementation, testing, and post-launch support (Ningsih & Nurfauziah, 2023). This approach was chosen because the development of information systems in the government environment requires comprehensive documentation and an orderly and monitorable workflow at every stage. The primary data sources in this study were obtained through three data collection techniques, namely direct observation of the operational workflow at the Tegal City Information and Documentation Management Officer office to understand the business processes that are running comprehensively, semi-structured interviews with the implementing staff and leaders of the unit to identify managerial barriers and user needs in depth, as well as a literature study that includes regulatory reviews and studies Previous research as a scientific foundation (Saputra, 2023). Secondary data obtained from literature studies include the legal basis of public information disclosure and relevant information system development theories to position research methodologically.

The data that has been collected is then analyzed systematically starting from the stage of

running system analysis, where all findings from observations and interviews are integrated to identify functional gaps in the document management process that is still manual-based at the Tegal City Information and Documentation Management Officer serving 73 Regional Apparatus Organizations. The results of the analysis are then translated into the system's functional and non-functional requirements specifications, which include document upload modules, verification and validation mechanisms by administrators, and real-time monitoring dashboard features. The system design was developed using Unified Modeling Language modeling which included usage diagrams, activity diagrams, and sequence diagrams to illustrate the interactions between components, while the database structure was designed through entity relationship diagrams and implemented on MySQL (Afiifah, Azzahra, & Anggoro, 2022). The built system is then tested using a black-box testing method that focuses on verifying the functionality of each key module, and ends with user acceptance testing involving administrator and operator representatives from the real operational environment to ensure the system meets the needs of the end-user as a whole (Wulandari, Saepudin, Kinanti, Sudesi, Saifudin, & Yulianti, 2022).

## RESULTS AND DISCUSSION

### System Design Results

The results of the first research include modeling and design of information systems built to transform the document management workflow at the Tegal City Information and Documentation Management Officer from a manual to a digital mechanism. The regulatory framework for public information management in Indonesia is regulated through Law Number 14 of 2008 concerning Public Information Disclosure (Pemerintah Indonesia, 2008), whose technical implementation is strengthened by Information Commission Regulation Number 1 of 2021 (Central Information Commission, 2021), and implemented at the regional level through Tegal Mayor Regulation Number 18 of 2017 (Pemerintah Kota Tegal, 2017). System modeling is carried out using a standard modeling language that includes usage diagrams, activity diagrams, and sequence diagrams to comprehensively describe the interaction between actors and systems (Ningsih & Nurfauziah, 2023). The information system approach in the context of government functions as a means of supporting administration and public services (Saputra, 2023). The system is designed to accommodate two main user roles, namely the Administrator and the Regional Device Organization Operator, each with customized access rights. The core workflow starts

with the Operator uploading the document, then the system stores the data and sends a notification to the Administrator to perform the check. If the document is eligible, its status is updated and entered into the public archive; otherwise the Operator is required to re-upload. All of these flows are illustrated in Figure 1.

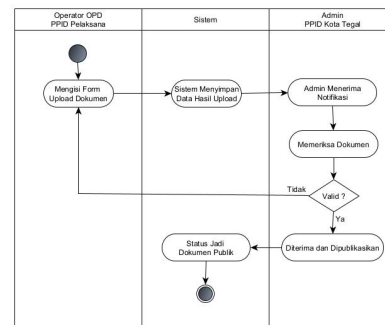


Figure 1. Source Document Upload and Verification Activity Diagram: Research Results (2025)

### Database Design Results

The results of the data modeling design show that the system is built with a database structure consisting of five main entities that are relationally interconnected to avoid redundancy and ensure data integrity (Afiifah, Azzahra, & Anggoro, 2022). The user table stores account and agency identity data along with their respective access levels. The category table classifies the types of public information as a reference for the grouping of documents. The information table stores the metadata and files of the uploaded document along with the attributes of the status and number of downloads. The information request table records requests from the public along with supporting data of the applicant, while the request reply table accommodates official responses from related agencies. Relationships between entities are built in a one-to-many pattern, where the user table and category table are connected to the information table and the request table, and the request table is connected to the reply table. The structure is depicted in Figure 2.

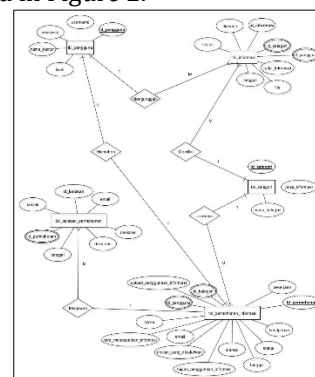


Figure 2. Source Information System Entity Relationship Diagram: Research Results (2025)

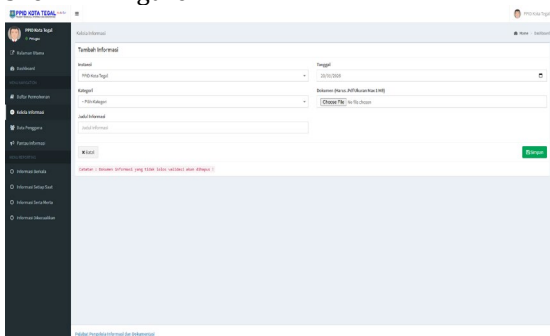
### System Implementation Results

The results of the system implementation show that all the key features that have been designed have been successfully translated into a functional web-based application using HTML, PHP, and MySQL technologies (Enterprise, 2023). The monitoring dashboard page designed specifically for Administrators displays a statistical summary of the number of documents divided by four categories of information: periodic, immediate, timely, and excluded. This view allows Administrators to monitor document submission compliance from 73 Regional Device Organizations across the board in one unified view. The results of the implementation of the monitoring dashboard are shown in Figure 3.



**Figure 3.** Administrator Monitoring Dashboard View  
Source: Research Results (2025)

The document upload interface for Regional Device Organization Operators is designed with a simple and structured form. The form includes the agency selection column, information category, information title, date, and document file upload column. The system automatically validates the format and size of the uploaded file, and displays a warning message if the document does not meet the specified requirements. This ensures that only valid documents are stored in a centralized digital archive. The display of the document upload page is shown in Figure 4.



**Figure 4.** Source Document Upload Page View:  
Research Results (2025)

### Testing Results and Discussion

System functionality testing is carried out using a black-box testing method that focuses on verifying system behavior from the user interface side without paying attention to the internal code structure (Wulandari, Saepudin, Kinanti, Sudesi, Saifudin, & Yulianti, 2022). The test was implemented on four main modules, including the access security module with four test scenarios, the document upload module with three scenarios, the verification and validation module with three scenarios, and the monitoring dashboard module with one scenario. The results of the tests on all eleven scenarios showed that the system responded to each input according to the designed behavior. The overall results of the functional tests are presented in Table 1.

**Table 1.** Functional Test Results

Yes	Testing Scenarios	Expected Results	Test Results	Conclusion
1	Clear the username and password and click Login	The system denies access and displays the message "Data must not be empty"	As expected	Valid
2	Entering the wrong username and password	The system denies access and displays the message "Username or Password incorrect"	As expected	Valid
3	Enter the correct username and password as an Operator	The system receives access and directs to the Regional Device Organization dedicated dashboard	As expected	Valid
4	Trying to access a dashboard page directly through a web address without logging in	The system rejects and redirects back to the login page	As expected	Valid
5	Upload documents with the appropriate format and size	The document was successfully saved with a status of "Pending" and a success notification appeared	As expected	Valid
6	Upload a document with a prohibited format	The system rejects the file and displays an invalid	As expected	Valid

		format warning message		
7	Clear required fields at upload	The system rejects storage and asks the user to complete the data	As expected	Valid
8	Administrator presses the preview button on the incoming document	The system displays a preview or download the document file	As expected	Valid
9	Administrator presses the receive verification button	The status of the document changes to "Verified" and appears in the public archive	As expected	Valid
10	The administrator presses the revision button and provides a note	The document status changes to "Revision" and the record appears on the relevant Regional Apparatus Organization dashboard	As expected	Valid
11	Opens the dashboard page after a new Regional Device Organization uploads a document	Statistics and figures for the number of documents increase automatically	As expected	Valid

Source: Research Results (2025)

Furthermore, user reliability testing is carried out involving representatives of Administrators and Regional Device Organization Operators as end users of the system. This test aims to verify whether the built system is acceptable in a real work environment. The test results showed that all seven acceptance criteria were met with a positive status as detailed in Table 2. These findings are in line with research Shavira et al. (2022) regarding the effectiveness of monitoring dashboards in government reporting transparency, and Pujiady, et al. (2025) related to the ability of digital archiving systems to reduce the risk of document loss. A similar approach is also applied by Hapira (2022) in designing a web-based PPID public service application, Elvina et al. (2023) in the digital archive system of the Padang District Attorney's Office, Rizki et al. (2023) in responsive web-based digital archiving at the ATR/BPN Office, and Maylina et al. (2024) who designed a website-based archival

information system. Compared to these studies, this study prioritizes the transformation of internal workflows from 73 Regional Apparatus Organizations to a single centralized management unit.

**Table 2.** User Reliability Test Results

Yes	Acceptance Scenario	Admission Criteria	Actor Tester	Results
1	Ease of Interface	Is the website's appearance (menus, buttons, forms) easy for ordinary users to understand and navigate?	All Actors	Yes
2	Document Upload Process	Can Regional Device Organization Operators upload documents easily without technical constraints?	Regional Apparatus Organization Operator	Yes
3	Clarity of Information	Can Operators understand the status of their documents clearly?	Regional Apparatus Organization Operator	Yes
4	Verification Efficiency	Do the preview features and verification buttons help Administrators check documents faster than manual methods?	Administrator	Yes
5	Monitoring Dashboard Accuracy	Does the graph on the dashboard change automatically and accurately according to the newly entered data?	Leadership	Yes
6	System Performance	Is the system stable and responsive when accessed over the network?	All Actors	Yes
7	User Satisfaction	Does the system as a whole help speed up document	All Actors	Yes

		governance work?		
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Source: Research Results (2025)

### Comparative Analysis of Old and New Systems

The transformation from manual to digital systems has brought significant changes in the document management process at the Tegal City Information and Documentation Management Officer. Prior to the implementation of the information system, the process of recapitulation of documents from 73 Regional Apparatus Organizations took an average of four weeks because it relied on the physical delivery of documents and manual communication by mail or telephone. The Regional Apparatus Organization Operator must send documents in printed form to the Office of the Information and Documentation Management Officer, then the Administrator manually verifies one by one by recording the results in the register book.

With the implementation of a web-based information system, the document recapitulation time is reduced to a maximum of one week because uploads can be done simultaneously by all Regional Apparatus Organizations. Automated notifications that the system sends to the Administrator allow the verification process to be carried out in real-time. The document preview feature makes it easy for Administrators to check completeness without having to manually open individual files. Revision communication also becomes faster as revision records directly appear in the dashboard of the Operator in question.

The aspects of transparency and accountability have increased significantly. In the manual system, statistical data on document submission is difficult to track because the information is scattered in various register books. The new system provides a monitoring dashboard that displays statistics in real-time with graphical visualization. In terms of security, the digital system provides better assurance with periodic backup mechanisms and audit logs for tracking the history of changes in the status of documents.

### Evaluate the suitability of the system to the needs of users

Evaluation of the suitability of the system is carried out to ensure that the implemented features have met the daily operational needs of users in the field. Based on the needs analysis that has been carried out in the initial stage of the research, the system is designed to overcome three main problems, namely the delay in document recapitulation, the difficulty of monitoring the compliance of the submission of 73 Regional

Apparatus Organizations, and the lack of transparency in the document verification process.

Functional needs for Regional Device Organization Operators which include account authentication features, document upload modules, status monitoring, and answering information requests have been implemented thoroughly. The document upload module comes with automatic validation that helps the Operator avoid formatting or file size errors. From the Administrator's side, functional needs that include master data management, document verification and validation, and real-time monitoring dashboards have also been well met.

Evaluation of the non-functional aspects of the system shows positive results. The system interface designed with the principle of simplicity in mind makes it easier for users with varying levels of digital literacy to operate the system. The system has been tested under simultaneous user load conditions and demonstrated good stability without experiencing errors during the test period. Although the system has met most of the needs of users, some operators have proposed a notification feature via a short message application to be able to know the status of documents immediately. The administrator also proposed the addition of a report export feature in Excel or PDF format to facilitate the preparation of periodic reports.

## CONCLUSION

This research succeeded in developing a web-based information system for document governance at the Tegal City Information and Documentation Management Officer which integrates 73 Regional Apparatus Organizations in one integrated platform. The implementation of the system using the Waterfall method produces an effective solution to overcome the problem of manual document management which previously took four weeks for the recapitulation process. The system built provides digital document upload features, automatic verification, and real-time monitoring dashboards that make it easier to monitor the status of document submissions. The results of functional testing showed that all modules were running according to specifications with a one hundred percent success rate. User reliability testing also confirms that the system is able to improve work efficiency and reduce the burden of manual communication. This digital transformation provides significant benefits in the form of accelerating the verification process, increasing transparency through statistical visualization, and minimizing the risk of losing physical archives. This system is an important foundation for improving

the quality of public information services within the Tegal City Government.

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