Improving the Efficiency of Lecturer Research Assignment Letter Management through a Web-Based System

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ABSTRACT

The management of lecturer research assignment letters is an important part of university administration because it is directly related to the legality of research activities and lecturer performance reporting. However, in many institutions, the process of submitting and issuing assignment letters is still carried out manually, causing various problems, such as service delays, recording errors, and difficulties in filing and tracing documents. This research aims to design and implement a web-based lecturer research assignment management system to improve the efficiency and quality of administrative services. The research method used is the Research and Development (R&D) method with the stages of needs analysis, system design, development, testing, and implementation. The system is developed using web-based technology with key features including user authentication, online assignment submission, multi-level verification and approval, and integrated digital archiving. System testing is carried out through functionality tests and user feasibility tests. The results of the study show that the developed system is able to speed up the process of managing lecturers' research assignment letters, improve archive order, and make it easier for users to access and monitor the status of letters in real-time. Based on the results of the feasibility test, the system is considered feasible to use and effective in improving the efficiency of lecturer research administration in universities.

Keywords: *web systems, assignment letters, document management, efficiency, college*

ABSTRAK

Pengelolaan surat tugas penelitian dosen merupakan bagian penting dalam administrasi perguruan tinggi karena berkaitan dengan keabsahan kegiatan penelitian dan pelaporan kinerja dosen. Namun, di banyak perguruan tinggi, pengajuan dan penerbitan surat tugas masih dilakukan secara manual. Cara ini sering menyebabkan keterlambatan layanan, kesalahan pencatatan, serta kesulitan dalam menyimpan dan mencari kembali dokumen. Penelitian ini bertujuan untuk merancang dan membangun sistem pengelolaan surat tugas penelitian dosen berbasis web agar proses administrasi menjadi lebih cepat dan tertata. Metode yang digunakan adalah Research and Development (R&D) yang meliputi analisis kebutuhan, perancangan sistem, pengembangan, pengujian, dan penerapan sistem. Sistem berbasis web ini menyediakan fitur login pengguna, pengajuan surat tugas secara online, proses verifikasi dan persetujuan bertahap, serta penyimpanan arsip digital. Pengujian dilakukan melalui uji fungsi sistem dan penilaian pengguna. Hasil penelitian menunjukkan bahwa sistem ini dapat mempercepat pengelolaan surat tugas, merapikan arsip, serta memudahkan pengguna untuk melihat dan memantau status surat secara langsung. Berdasarkan hasil penilaian pengguna, sistem dinyatakan layak digunakan dan membantu meningkatkan efisiensi administrasi penelitian dosen di perguruan tinggi.

Kata kunci: *sistem web, surat tugas, manajemen dokumen, efisiensi, perguruan tinggi*

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INTRODUCTION

The development of information and communication technology has prompted a major transformation in the management of organizational administration, including in the higher education environment. Digitization of work processes is a strategic need so that institutions are able to adapt to the demands of efficiency, transparency, and accountability. Web-based information systems are now the main solution because they are able to provide fast, integrated, and unbound data access to space and time (Aládé, 2023; Triyana & Fianty, 2023).

Universities as knowledge-producing institutions have high administrative complexity, especially in the management of lecturers' tridharma activities, namely education, research, and community service. One of the administrative documents that is very important in supporting lecturers' research activities is a research assignment letter. This letter serves as legal evidence of assignments, the basis for performance reporting, and administrative requirements in the accreditation of study programs and institutions. Therefore, the management of research assignment letters must be carried out systematically, accurately, and well-documented. However, in practice, there are still many universities that manage lecturers' research assignments manually or semi-digitally, for example, using printed documents, separate spreadsheets, or applications that are not integrated. This management pattern poses various problems, including delays in the process of submitting and issuing letters, duplication of lecturer data, input errors, difficulties in tracking archives, and low transparency in the status of letter applications (Kurniah, 2023; Anggraeni & Fatah, 2025).

Previous research has shown that web-based information systems in document and archive management can significantly improve operational efficiency. Wijoyo et al. (2024) found that web-based archiving applications can speed up the document search process and reduce administrative workload. Hartono et al. (2025) also emphasized that an archive management system based on Progressive Web Apps is able to increase the flexibility of access and the effectiveness of users' work in higher education environments.

In addition, the use of the Electronic Document Management System (EDMS) has been proven to improve the quality of administrative services through structured, secure, and easy-to-trace document management. Anggraini et al. (2024) show that the implementation of EDMS has a positive impact on user satisfaction and system quality. These findings are reinforced by Sari et al. (2025), who state that electronic document

management systems improve data consistency and accelerate organizational workflows.

Web-based document management systems make an important contribution to the optimization of administrative processes. Triyana and Fianty (2023) explain that web-based systems are able to reduce dependence on physical archives and facilitate coordination between departments. Syauqi and Suendri (2024) also stated that web-based digital archive systems improve data regularity and speed up the verification and document disposition process. However, most of the existing research still focuses on the management of the incoming-outgoing letter archive in general in government agencies or schools. Studies that specifically discuss the management of lecturer research assignment letters based on web information systems are still very limited. In fact, lecturer research administration has different and more complex characteristics, because it involves lecturer personal data, research titles, implementation periods, funding sources, and relationships with lecturer and institution performance reporting systems (Putra et al., 2025; Arfan & Basinung, 2025).

This complexity requires a system that not only functions as an archive, but also as a workflow management medium, starting from submitting letters, verification, approval of leaders, issuing letters, and archiving and reporting. Without an integrated system, this process has the potential to hinder lecturer productivity and reduce the quality of academic services (Syofiawan et al., 2025). In addition to the time efficiency aspect, a web-based research assignment management system is also important in increasing transparency and accountability. With digital systems, every process can be tracked in real-time, reducing the risk of data manipulation, archive loss, and administrative errors. This is in line with the demands of modern and technology-based university governance.

Based on this description, it can be concluded that there is a clear research gap, namely the study and implementation of web-based information systems that are specifically designed to manage lecturers' research assignments in an integrated manner. Existing research focuses more on general archiving, rather than on the administrative management of lecturers' research in a specific and comprehensive way. Therefore, this research is directed to develop a web-based lecturer research assignment letter management system that is able to improve the efficiency, accuracy, and quality of administrative services in higher education. This system is expected to simplify the submission process, speed up the verification and issuance of letters, and provide neat, secure, and accessible digital archives. With this system, it is hoped that not only will improve administrative performance, but also support the productivity of lecturers in carrying out

research, strengthen institutional governance, and improve the quality of academic services as a whole.

METHODS

This research uses a Research and Development (R&D) approach that aims to produce a product in the form of a web-based information system for managing lecturer research assignment letters while testing its effectiveness in improving administrative efficiency. This approach was chosen because the research focuses not only on problem analysis, but also on the development and application of solutions that can be used directly by institutions. The system development process refers to the System Development Life Cycle (SDLC) model with a waterfall approach, which includes the stages of needs analysis, system design, implementation, testing, evaluation, and maintenance.

The subjects in this study involve administrative staff of the research management unit, lecturers as users of assignment letters, and leaders or authorities in the letter endorsement process. The object of the research is the process of managing lecturers' research assignment letters which includes submission, verification, approval, issuance, archiving, and reporting of research assignment letters. To obtain accurate and relevant data, this study uses data collection techniques in the form of observations, interviews, documentation studies, and questionnaires. Observations were carried out to directly observe the workflow of running mail management, while interviews were conducted in a semi-structured manner to related parties to explore the needs of the system and the problems faced. The documentation study was carried out by reviewing documents related to the research assignment letter, while the questionnaire was used at the evaluation stage to measure the level of satisfaction and user perception of the developed system.

The requirements analysis stage aims to identify the functional and non-functional needs of the system. Functional needs include managing lecturer and research data, submitting assignment letters online, digital verification and approval processes, issuing letters in PDF format, structured archiving, and providing research assignment reports. Meanwhile, non-functional needs include data security aspects through user authentication and authorization systems, ease of use of interfaces, and accessibility of web-based systems. Based on the results of the needs analysis, a system design was carried out which included designing the process flow using activity diagrams, designing databases using Entity Relationship Diagrams, and designing user interfaces to ensure that the system is easy to understand and use.

The implementation of the system is carried out by utilizing web-based technologies, such as the PHP programming language with the Laravel framework, MySQL or MariaDB databases, and the Bootstrap interface framework. The developed system includes a login and user management module, a letter of assignment submission module, a verification and approval module, a task letter printing module in PDF format, and an archiving and reporting module. After the system is completed, testing is carried out using the black box testing method to ensure that each system function runs according to needs. In addition, a User Acceptance Test (UAT) is carried out by involving users to assess the suitability of the system with their needs, ease of use, and benefits of the system in supporting administrative work.

The evaluation stage is carried out based on the results of tests and user questionnaires. Qualitative data from interviews and observations were analyzed descriptively, while quantitative data from questionnaires were analyzed using a Likert scale to determine the level of satisfaction and user perception of the system. The results of the analysis were used to assess the effectiveness of the system in improving the efficiency of the management of lecturers' research assignments. Indicators of the success of this research include accelerating the time of issuing letters, the ease of searching archives, increasing user satisfaction, and reducing the rate of administrative errors. Thus, the web-based information system for the management of lecturer research assignment letters is expected to be an effective solution in supporting research administration management in universities.

RESULTS AND DISCUSSION

The results of this research were obtained from the stages of implementation and evaluation of the web-based lecturer research assignment management information system developed using the Research and Development approach. The resulting system can manage the entire administrative process of research assignment letters in an integrated manner, starting from submission by lecturers, verification by admins/research units, approval of leaders, and the issuance of assignment letters in the form of digital documents (PDF) that are automatically stored in the system database.

At the implementation stage, the system was successfully built with several main modules, namely the user management module, the lecturer and research data module, the assignment letter submission module, the verification and approval module, the assignment letter printing module, and the archive and reporting module. Each module is tested using black

box testing and shows that all functions are running according to the requirements that have been determined at the analysis stage. Based on the results of functional testing, the system is able to speed up the process of managing lecturers' research assignment letters. Before the system is implemented, the process of issuing assignment letters takes an average of 3-5 working days because it has to go through a manual process and the transfer of physical documents between units. Once the web-based system is implemented, the time for issuing assignment letters can be cut to 1 working day or even less, because the entire process is done online and integrated.

The results of the evaluation through questionnaires to users (lecturers and administrative staff) showed a high level of satisfaction with the developed system. Most respondents stated that the system is easy to use, speeds up the work process, and makes it easier to find assignment letter archives that were previously difficult to find in manual systems. The average value of user satisfaction is in the "good" to "excellent" category. In addition, the system is also able to improve data accuracy and security. With user authentication and access rights settings, only authorized parties can manage and authorize assignment letters. Every user's activity is recorded in the system, making it easier to monitor and audit administration.

The results of the study show that the application of a web-based information system for the management of lecturer research assignment letters has a positive impact on the efficiency and effectiveness of administration in the university environment. These findings are in line with various previous studies that stated that digitizing mail and archive management can increase process speed, reduce human error, and make it easier to access data (Pratama et al., 2020; Nugraha & Ramadhan, 2023). The significant acceleration in the time of issuance of assignment letters proves that web-based systems are able to eliminate bureaucratic obstacles that usually occur in manual systems, such as delays in document distribution and reliance on the physical presence of relevant officials. With this system, the workflow becomes shorter and more transparent, as each stage can be monitored in real-time. The ease of searching assignment letter archives is also one of the main advantages of the system. Previously, administrative staff had to open physical archives one by one to find certain letters, which was time-consuming and potentially led to document loss. With a digital system, searches can be conducted based on lecturer names, research titles, years, or letter numbers, thereby speeding up the work process and improving the quality of administrative services. A high level of user satisfaction indicates that the developed system has met the

needs of users, both in terms of functionality and ease of use. This is in accordance with the opinion of Wibowo et al. (2023), who stated that the success of information systems is not only determined by technological sophistication, but also by the level of user acceptance.

Conceptually, this research strengthens the view that web-based information systems can play an important role in supporting lecturer research management in universities. The developed system not only serves as an administrative tool but also as a strategic database that can be used for lecturer performance reporting, accreditation, and managerial decision-making. Thus, the results of this study confirm that the development of a web-based lecturer research assignment letter management system is the right solution to increase the efficiency, transparency, and accountability of research administration in universities. This finding also closes the research gap that previously did not study the system of specific research assignment letters for lecturers.
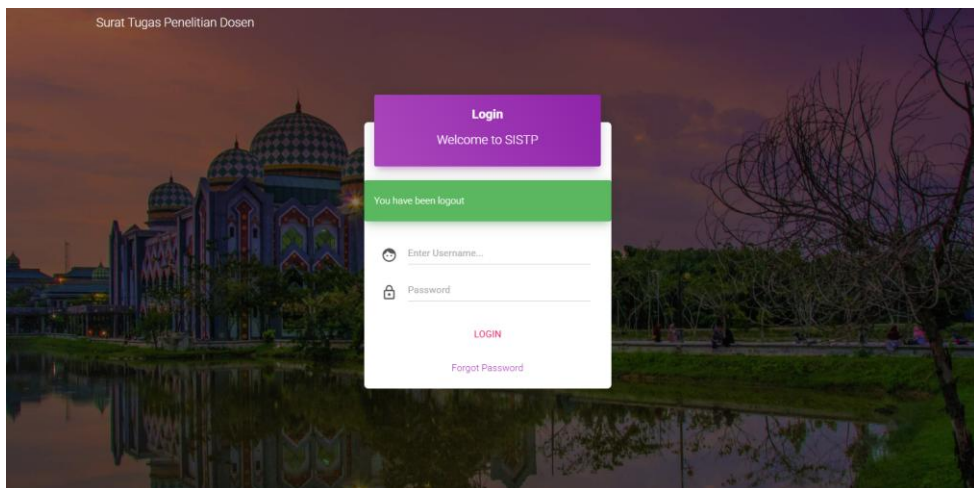

Figure 1. Login to Login

Figure 1 shows the login page on the Lecturer Research Assignment Information System (SISTP). On this page, users are asked to enter their username and password as authentication processes before they can access the system. The interface is designed to be simple and responsive by displaying the title "Login - Welcome to SISTP", username and password input fields, Login button, and Forgot Password link. This feature aims to keep data secure and ensure that only users who have access rights can enter the system.
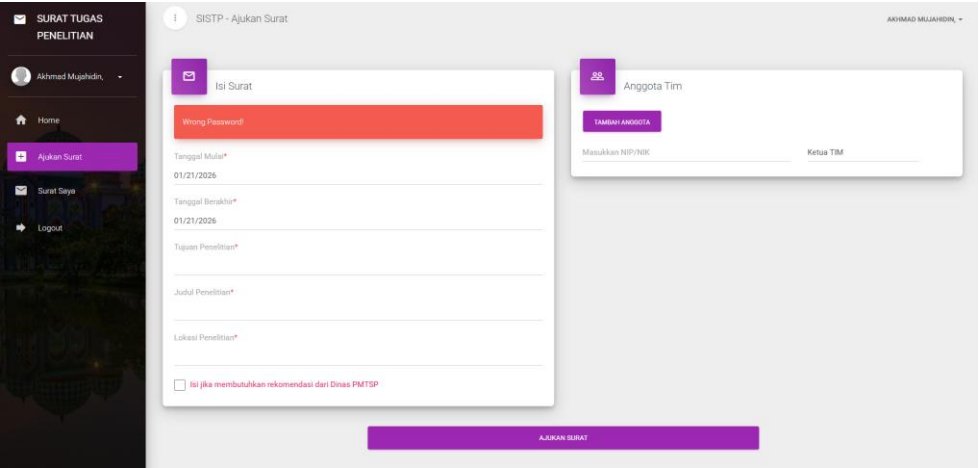
Figure 2. Letter Submission Page

Figure 2 shows the page for submitting research assignment letters on the Lecturer Research Assignment Information System (SISTP). On this page, users (lecturers) fill out the submission form which consists of several main components, namely the start and end dates of the research, the purpose of the research, the title of the research, and the location of the research. In addition, there is a feature to add team members by entering NIP/NIK and determining the team leader. The system also provides a check option if the research requires a recommendation from the PMTSP Office. After all the data is filled in, users can apply through the "Submit Letter" button at the bottom of the page. This page is designed to make the process of submitting assignment letters easier in a structured and efficient manner.
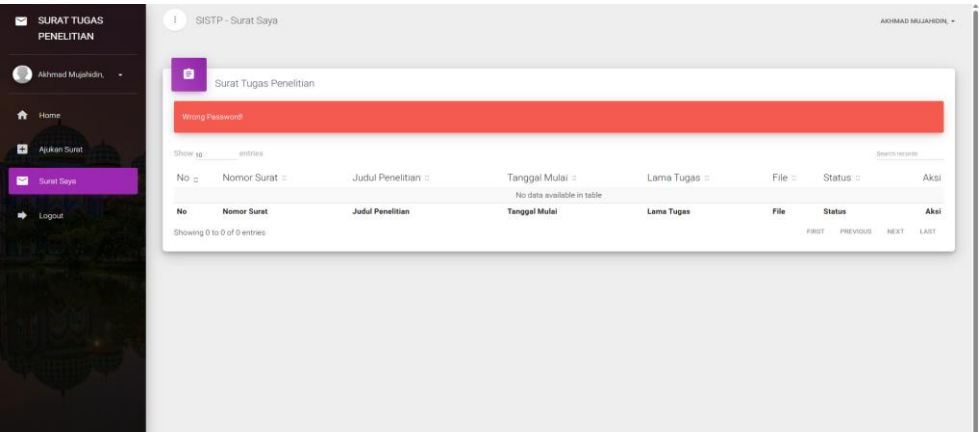

Figure 3. Research Assignment Letter Page

Figure 3 shows the My Letter page on the Lecturer Research Assignment Information System (SISTP). This page serves as a medium for

lecturers to see the entire history of submission of research assignment letters that have been submitted. In the table displayed, there are several main columns, namely the letter number, research title, start date, task duration, letter file, submission status, and action column. The search feature and the number of entries (show entries) are provided to make it easier for users to find mail data quickly. Through this page, lecturers can monitor the status of assignment letters whether they are still in process, approved, or rejected, thereby increasing transparency and efficiency in the management of research administration.

CONCLUSION

Based on the results of the design, implementation, and testing of the Web-Based Lecturer Research Assignment Management Information System, it can be concluded that the developed system is able to increase the efficiency and effectiveness of the research assignment letter administration process in the university environment. This system successfully integrates all stages of assignment letter management, starting from submission by lecturers, verification process by admins, approval of leaders, to the issuance and filing of letters in digital form.

The implementation of a web-based system has been proven to be able to speed up the time of issuing assignment letters compared to the manual system previously used. In addition, this system also improves data accuracy, document security, and ease of searching research assignment archives. The user authentication features and access rights settings ensure that every process is carried out by the authorities and is accountable. From the user side, the system received a positive response. Lecturers and administrative staff feel helped because the process of submitting and managing letters becomes more practical, transparent, and no longer relies on physical documents. This shows that the developed system is in accordance with the needs of users and is feasible to be implemented on an ongoing basis. Thus, this study proves that the development of a web-based lecturer research assignment management information system is an effective solution to support lecturer research management, improve the quality of administrative services, and strengthen the governance of higher education institutions.

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