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Development of a Web-Based Information Technology Complaint Management System: A Case Study at the East Jakarta Medium Tax Office

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***Abstract*— Information technology services play an important role in supporting organizational activities, including the management of complaints related to information technology issues. However, the process of recording and monitoring complaint resolution activities that are still conducted manually may cause difficulties in tracking progress, documenting problem histories, and evaluating service performance. This study aims to develop a Web-Based Information Technology Complaint Management System to support the recording, monitoring, and management of IT complaint resolution activities at the East Jakarta Medium Tax Office. The system was developed using a software development approach consisting of requirements analysis, system design, implementation, and testing. The developed application provides features for complaint submission, complaint status monitoring, resolution activity recording, and reporting documentation. System testing was conducted using Black Box Testing to evaluate the functionality of each feature based on predetermined test scenarios. The test results indicate that all tested functions operate according to the expected requirements, demonstrating that the developed system can properly support the management of IT complaint resolution activities. This research contributes to improving the effectiveness of complaint documentation and monitoring processes through the implementation of a structured web-based information system.**
Keywords— Information Technology Complaint Management, Web-Based Information System, System Development, Black Box Testing, Complaint Resolution.

Intisari— **Layanan teknologi informasi memainkan peran penting dalam mendukung kegiatan organisasi, termasuk pengelolaan keluhan terkait masalah teknologi informasi. Namun, proses pencatatan dan pemantauan kegiatan penyelesaian keluhan yang masih dilakukan secara manual dapat menyebabkan kesulitan dalam melacak kemajuan, mendokumentasikan riwayat masalah, dan mengevaluasi kinerja layanan. Studi ini bertujuan untuk mengembangkan Sistem Manajemen Pengaduan Teknologi Informasi Berbasis Web untuk mendukung pencatatan, pemantauan, dan pengelolaan kegiatan penyelesaian pengaduan TI di Kantor Pelayanan Pajak Pratama Jakarta Timur. Sistem ini dikembangkan menggunakan pendekatan pengembangan perangkat lunak yang terdiri dari analisis kebutuhan, desain sistem, implementasi, dan pengujian. Aplikasi yang dikembangkan menyediakan fitur untuk pengajuan keluhan, pemantauan status keluhan, pencatatan aktivitas penyelesaian, dan dokumentasi pelaporan. Pengujian sistem dilakukan menggunakan Black Box Testing untuk mengevaluasi fungsionalitas setiap fitur berdasarkan skenario uji yang telah ditentukan. Hasil pengujian menunjukkan bahwa semua fungsi yang diuji beroperasi sesuai dengan persyaratan yang diharapkan, menunjukkan bahwa sistem yang dikembangkan dapat mendukung manajemen kegiatan penyelesaian keluhan TI dengan baik. Penelitian ini berkontribusi untuk meningkatkan efektivitas dokumentasi dan pemantauan keluhan melalui penerapan sistem informasi berbasis web yang terstruktur.**
Kata kunci— Manajemen Pengaduan Teknologi Informasi, Sistem Informasi Berbasis Web, Pengembangan Sistem, Pengujian Black Box, Penyelesaian Pengaduan.

I. INTRODUCTION

The rapid advancement of information and communication technology (ICT) has significantly changed the way organizations manage their operational activities. ICT systems have become an essential component in supporting organizational processes, improving service efficiency, and facilitating information management. However, the increasing utilization of ICT also creates new challenges, including system disruptions, application errors, security issues, and user-related problems. These challenges require an effective ICT complaint management process to ensure that reported issues can be documented, monitored, and resolved properly [1], [2], [3].

Government institutions are among the organizations that rely heavily on ICT infrastructure to support administrative processes and public services. The Directorate General of Taxes (DGT), as an institution under the Ministry of Finance of the Republic of Indonesia, utilizes various ICT systems to support taxation services and internal organizational activities. One of its operational units is the Medium Tax Office (Kantor Pelayanan Pajak Madya/KPP Madya), which is responsible for providing tax services to taxpayers. Within the organizational structure of KPP Madya, the Data Quality Assurance Section (Seksi Penjaminan Kualitas Data) has an important role in ensuring data quality and supporting ICT-related operational activities. The System Administrator assigned to this section is

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responsible for managing, maintaining, and monitoring ICT systems, while also ensuring data integrity, system performance, and operational effectiveness.

The East Jakarta Medium Tax Office, as part of the Directorate General of Taxes, also experiences various ICT-related problems reported by employees. One of the main responsibilities of the System Administrator is handling complaints related to ICT issues and ensuring appropriate follow-up actions. ICT complaint resolution is categorized into two mechanisms: direct resolution by the System Administrator at the KPP level or escalation to higher-level units, such as the East Jakarta Regional Tax Office or the Directorate of Information Technology, when the reported problems require further handling.

The performance of ICT complaint resolution is evaluated based on the completion time and the unit responsible for resolving the reported issues [4], [5], [6]. Each complaint receives a weighted score according to the duration of resolution and the resolution category. The accumulated score is then used to calculate the percentage of ICT complaint follow-up achievement. This measurement is evaluated against quarterly performance targets established by the organization, consisting of 85% in the first quarter, 90% in the second quarter, 95% in the third quarter, and 100% in the fourth quarter.

However, the existing ICT complaint administration process at the East Jakarta Medium Tax Office still faces several limitations. Complaint records, resolution activities, and performance calculations are managed manually using spreadsheet applications. This process increases the possibility of data input errors, difficulties in monitoring complaint progress, and inefficiencies in calculating resolution performance. In addition, the absence of an integrated information system limits the ability of the System Administrator and the Head of the Data Quality Assurance Section to monitor complaint status and evaluate ICT service performance effectively [7], [8], [9].

Several studies have shown that web-based information systems can improve organizational performance through structured data management, automated processes, and better information accessibility [10], [11], [12]. Nevertheless, an integrated ICT complaint management system that supports complaint recording, resolution activity tracking, performance calculation, and reporting within a government taxation environment remains limited. Therefore, an information system that can adapt to organizational requirements and provide continuous improvement throughout the development process is required.

The Iterative and Incremental Model is considered suitable for developing this system because it enables software development through repeated cycles and gradual feature implementation. Unlike sequential development approaches, this model allows developers to build the system incrementally, evaluate each developed component, and incorporate user feedback into subsequent iterations. This approach is particularly appropriate for organizational systems where user requirements may evolve during the development process.

This study aims to develop a Web-Based Information Technology Complaint Management System to support the recording, monitoring, and reporting of ICT complaint resolution activities at the East Jakarta Medium Tax Office. The developed system provides functionalities for complaint data management, resolution activity recording, complaint status monitoring, automatic performance weighting calculation, and periodic reporting. The system development applies the Iterative and Incremental Model, where each iteration consists of requirement analysis, design, implementation, evaluation, and refinement stages. System functionality is evaluated using Black Box Testing to ensure that each implemented feature operates according to the specified requirements.

The contribution of this research is the development of an integrated web-based ICT complaint management system that supports more effective administration, monitoring, and evaluation of ICT problem resolution activities within a government institution. The proposed system provides a structured mechanism for managing ICT complaints while improving accessibility, accuracy, and efficiency in performance monitoring processes..

II. BACKGROUND / LITERATURE REVIEW

A. Information Technology Complaint Management

Information technology (IT) services have become a critical component in supporting organizational operations. The increasing dependence on IT infrastructure requires organizations to establish effective mechanisms for managing incidents and complaints related to technology services. IT complaint management refers to a structured process of receiving, documenting, analyzing, resolving, and evaluating reported problems to maintain service availability and user satisfaction.

According to IT service management principles, effective complaint handling requires accurate documentation of incidents, clear responsibility assignment, resolution tracking, and performance evaluation. Without a structured management system, organizations may experience difficulties in identifying recurring problems, measuring service performance, and ensuring that complaints are resolved within the expected timeframe. Therefore, an information system that supports complaint management activities is necessary to improve transparency, accountability, and operational efficiency.

In organizational environments, complaint management systems are not only used as tools for recording problems but also as mechanisms for improving service quality. The availability of historical complaint data allows organizations to analyze problem patterns, evaluate response performance, and develop preventive actions. Thus, the implementation of an IT complaint management system can contribute to continuous improvement in IT service delivery.

B. Web-Based Information Systems

A web-based information system is an information management platform that utilizes web technologies to process,

store, and distribute information through a network environment. Compared with conventional manual documentation methods, web-based systems provide advantages in terms of accessibility, centralized data management, and real-time information availability [13], [14].

The implementation of web-based information systems enables users to access applications through standard web browsers without requiring additional software installation. This characteristic makes web-based systems suitable for organizational environments involving multiple users with different access levels. Furthermore, centralized databases allow data consistency to be maintained and reduce the risk of duplication or loss of information.

Previous studies have demonstrated that web-based information systems can improve administrative efficiency by automating repetitive processes, reducing human errors, and providing structured reporting features. In the context of complaint management, web-based applications support the entire complaint lifecycle, including submission, verification, assignment, monitoring, resolution documentation, and reporting.

For government institutions, the adoption of web-based information systems also supports digital transformation initiatives by improving internal processes and strengthening data-driven decision-making. Therefore, the development of a web-based IT complaint management system is considered an appropriate approach to address limitations associated with manual complaint administration.

C. Black Box Testing

Software testing is an essential stage in information system development to ensure that the developed application meets functional requirements. One commonly used testing method is Black Box Testing, which evaluates system functionality based on input and output behavior without examining the internal structure or source code of the application.

Black Box Testing focuses on validating whether system features operate according to predefined requirements. The testing process involves providing specific inputs, observing system responses, and comparing the results with expected outputs. This method is widely used because it can identify functional errors from the user's perspective [15], [16], [17].

In web-based application development, Black Box Testing is frequently applied to evaluate important functionalities such as login authentication, data input processing, database transactions, report generation, and user interface interactions. The results of this testing provide evidence regarding whether the developed system is ready for implementation.

For the proposed IT complaint management system, Black Box Testing is applied to verify that each feature, including complaint recording, resolution activity documentation, performance calculation, monitoring dashboard, and reporting functionality, operates according to the designed requirements.

D. Previous Studies

Several previous studies have developed web-based complaint management systems to improve the effectiveness of complaint handling processes. These studies demonstrate that digital complaint management platforms can overcome limitations associated with manual recording methods by providing centralized data management, complaint monitoring features, and structured reporting mechanisms. The first relevant study was conducted by Viska Mutiawani et al., who developed a Web-Based Complaint Management System at the Integrated Laboratory Technical Management Unit of Syiah Kuala University. The research was motivated by problems in manual complaint handling processes that required more time and increased administrative workload. The developed system provided several functionalities, including complaint submission, complaint monitoring, follow-up management, and status tracking. The system development process applied the Scrum framework, and system functionality was evaluated using Black Box Testing. The results showed that all developed functions operated according to the expected requirements, indicating that the implementation of a web-based complaint management system could improve complaint handling efficiency. Lembaga KITA Journal [18].

The second study was conducted by Hafidz, which focused on designing a web-based complaint system for service management. The research developed an application that enabled users to submit complaints, monitor complaint status, and provide feedback through a structured digital platform. The system was implemented using web technologies and evaluated using Black Box Testing to ensure that each feature functioned properly. The testing results indicated that core functionalities, such as complaint registration, status tracking, and feedback management, operated according to the defined specifications. ejournal.ypayb.or.id [19].

The third study was a research on the development of a Web-Based Complaint Management System using Django, HTML5, and MySQL. The study highlighted that conventional complaint handling mechanisms often resulted in delayed responses, limited transparency, and difficulties in tracking resolution outcomes. The proposed system aimed to provide an integrated platform for complaint submission and resolution monitoring. The research demonstrated that web-based systems could improve accessibility, documentation accuracy, and transparency in complaint management processes. Zenodo [20]

Based on these previous studies, web-based complaint management systems have proven effective in improving complaint administration and monitoring processes. However, existing studies generally focus on general complaint handling in educational institutions or public service environments. Limited research has addressed information technology complaint management within government taxation institutions, particularly systems that incorporate resolution activity recording, escalation management, performance weighting calculations, and quarterly achievement reporting.
Therefore, this research proposes the development of a specialized Web-Based Information Technology Complaint Management System for the East Jakarta Medium Tax Office.

Unlike previous studies, the proposed system is designed not only to record complaints but also to support the complete workflow of ICT issue resolution, including complaint documentation, resolution tracking, automated performance calculation, and reporting. Furthermore, the use of the Iterative and Incremental Model enables continuous refinement of system features based on user feedback, ensuring that the developed system aligns with organizational requirements.

E. Research Gap

Previous studies have developed various web-based information systems for managing organizational data and improving administrative processes. However, most existing research focuses on general complaint management systems and does not specifically address IT complaint resolution processes within government taxation institutions.

The management of IT complaints at the East Jakarta Medium Tax Office has specific characteristics, including resolution classification, escalation mechanisms, weighted performance calculations, and quarterly achievement evaluation. These requirements differentiate this system from conventional complaint management applications.

Therefore, this research contributes by developing a specialized web-based IT complaint management system that integrates complaint recording, resolution monitoring, automatic performance weighting, and reporting features. The application of the Iterative and Incremental Model provides flexibility for continuous system improvement, while Black Box Testing ensures that the developed functionalities meet user requirements.

III. RESEARCH METHODOLOGY

This study employed a software development research approach to design and develop a web-based Information Technology (IT) complaint management system at the East Jakarta Medium Tax Office. The research focused on developing an information system that facilitates the recording, monitoring, and management of IT-related complaints in a structured and integrated manner.

The development process adopted the Iterative and Incremental Model, which enables system development through a series of repeated cycles and gradual feature improvements [21], [22], [23]. This approach was selected because it provides flexibility in accommodating changing user requirements and allows continuous evaluation throughout the development process. Each iteration consists of requirement analysis, system design, implementation, testing, and evaluation activities, resulting in incremental improvements until the final system meets the identified requirements. The research stages are illustrated in Figure 1.

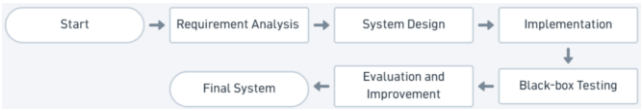


Figure 1. Research Methodology Framework

A. Research Object and Data Collection

The object of this research was the IT complaint management process at the East Jakarta Medium Tax Office. The research was conducted to identify existing problems in the complaint handling workflow and develop a system that supports more effective IT service management. Data collection was performed through several approaches, including:

A. *Observation*
   Observation was conducted by examining the existing complaint management process, including how users submit complaints, how IT personnel receive and process reports, and how complaint resolution is documented.
B. *Interviews*
   Semi-structured interviews were conducted with relevant stakeholders, including IT support personnel and users involved in complaint reporting activities. The interviews aimed to identify system requirements, operational challenges, and expected system features.
C. *Documentation Study*
   Documentation analysis was performed by reviewing existing complaint records, reporting procedures, and related administrative documents to understand the current workflow and information requirements.

The collected data were used as the basis for defining functional and non-functional requirements of the proposed system.

B. System Development Using Iterative and Incremental Model

The system development process was implemented using the Iterative and Incremental Model. This model divides system development into several increments, where each increment produces a functional version of the system. Feedback obtained from each iteration was used to improve subsequent system versions.

Increment 1: Basic Complaint Management Module

The first increment focused on developing the fundamental functions of the complaint management system. The implemented features included:

A. *User authentication*
B. *Complaint submission form*
C. *Complaint categorization*
D. *Complaint data storage*
E. *Complaint database management*

This increment produced the initial version of the system that enabled users to submit IT-related complaints digitally.

Increment 2: Complaint Monitoring and Resolution Module

The second increment focused on improving complaint handling efficiency through monitoring and tracking features. The developed functions included:

A. *Complaint status management*
B. *Assignment of complaints to IT personnel*
C. *Progress updates*

C. Complaint history tracking

This stage aimed to improve transparency by allowing users and administrators to monitor the progress of complaint resolution.

Increment 3: Reporting and Evaluation Module

The final increment focused on developing reporting features to support IT service evaluation. The implemented functions included:

A. Complaint summary dashboard
B. Complaint statistics
C. Resolution reports
D. Historical complaint analysis

The final version integrated all developed modules into a complete web-based IT complaint management system.

System Design and Implementation

The system design phase involved creating the system architecture, database structure, interface design, and workflow based on the identified requirements.

The proposed system consists of three main components:

A. User Interface Layer
This layer provides interaction between users and the system, including complaint submission, complaint tracking, and information display.

B. Application Processing Layer
This layer manages system logic, including complaint validation, status updates, user management, and reporting processes.

C. Database Layer
This layer stores system information, including user data, complaint records, complaint categories, status history, and resolution information.

The system was implemented as a web-based application to provide easier access, centralized data management, and improved complaint monitoring capabilities.

IV. RESULTS AND DISCUSSION

System requirements analysis plays an important role in establishing system requirements specifications. These specifications include the elements or components needed for system development up to its implementation. In designing the application for recording the resolution of ICT problem complaints, two types of equipment are required, namely hardware and software with the following specifications:

Hardware

Hard framework used to support development this website is:

A. Laptop : Lenovo Y50-70
B. Processor : Intel® Core™ i7-4710HQ CPU @ 2.50GHz
C. Memory : 8 GB

Software

Software used to support development this website is:

A. Operating System : Windows 10 Home 64 bit
B. Code Editor : Visual Studio Code
C. Navegador Web : Google Chrome
D. Servidor Web Localhost: XAMPP

A. Navigation Structure

The navigation structure applied in this writing systematically presents the information that will be displayed on the website. This navigation structure includes the use of menus, internal links, categories, or a well-organized hierarchy to provide an optimal user experience. The navigation structure to be used in this application is a mixed navigation structure, as shown in Figure 2.



Figure 2. Navigation Structure of the Administrator and Section Head

B. Use Case Diagram

Use Case Diagram is one of the UML diagrams used to illustrate how a system functions. This diagram shows the interaction between actors and the system, displaying the sequence of interactions that occur between users (actors) and the system. The application Use Case Diagram can be seen in the following Figure 3.

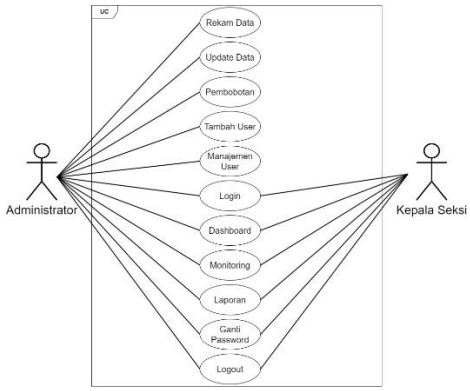


Figure 3. Use Case Diagram

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C. Activity Diagram

An activity diagram illustrates the flow from one activity to another within a system. An activity can represent one or more use cases. A use case describes how an actor utilizes the system to perform an activity. Activity diagrams also depict the detailed flow of each system function found in the use case diagram. The activity diagram is shown in Figure 4.

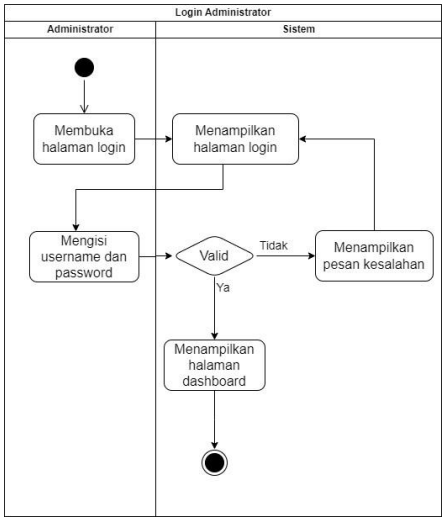


Figure 4. Administrator Login Activity Diagram

D. Class Diagram

A class diagram is a diagram that depicts the system structure by defining the classes to be created. It is a static diagram that illustrates the structure, class descriptions, attributes, methods, and relationships between objects. The application's class diagram is shown in Figure 5 below.

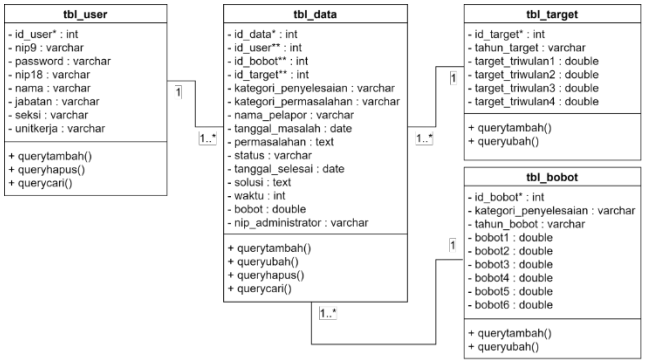


Figure 5. SIREKAP-TIK Class Diagram

E. Page Design

This section outlines the interface design—commonly referred to as User Interface (UI) design—providing an overview of the web layout to be developed. The administrator page is a dedicated section of the application intended for users with administrative roles; it provides full access to and control over system settings, configurations, and functions.

A. Login Page Design

The login page is the initial screen displayed when an administrator accesses the application. It is designed to authenticate administrators before they can access the system or services requiring authentication. On this page, administrators must enter valid credentials—such as their administrator ID (NIP) and password—to verify their identity and authorization. The login page design is illustrated in Figure 6 below.

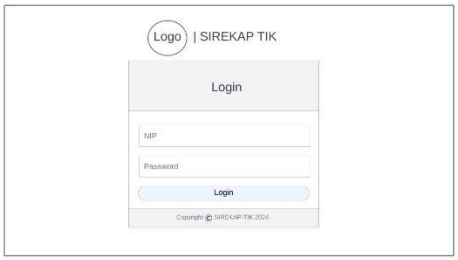


Figure 6. Login Page Design

B. Dashboard Page Design

The dashboard page is the initial screen that appears after an administrator successfully logs into the application. This page displays the number of unresolved, resolved, and total issues; a bar chart showing the number of issues; and performance achievement percentages, weightings, and annual targets. The dashboard page is shown in Figure 7 below.

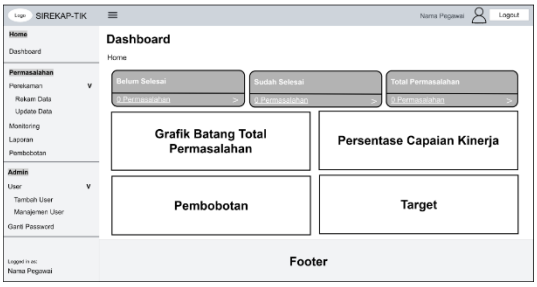


Figure 7. Administrator Dashboard Page Design

C. Data Entry Page Design

The data entry page is used by administrators to record ICT issues reported by employees. This page takes the form of a form containing the resolution category (resolved at the KPP or non-KPP), issue category, reporter's name, date of the issue, and the ICT issue reported by the employee. The data entry page is shown in Figure 8 below.

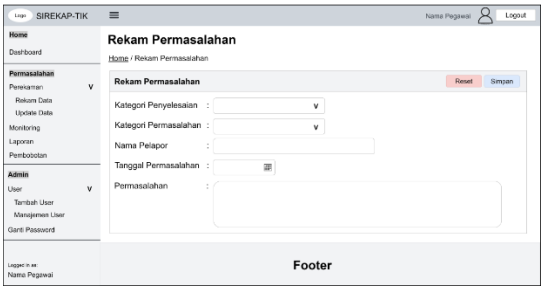


Figure 8. Design of the Issue Recording Page

D. Data Update Page Design

The data update page is used by administrators to update previously recorded ICT issue data. The page displays a table listing issues—showing their processing or completion status—along with the resolution category, issue category, reporter's name, issue date, issue status, the administrator in charge, and a "process" button. Clicking the "process" button opens a form containing an issue summary (formatted similarly to the data recording page) combined with two additional input fields that must be filled out: the solution and the date the ICT issue was resolved. The data update page is shown in Figure 9 below.

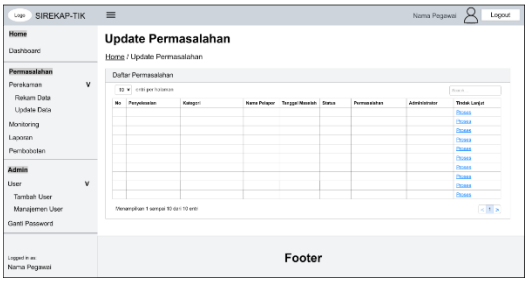


Figure 9. Design of the Issue List Data Update Page

E. Monitoring Page Design

The monitoring page is used by administrators to track ICT issues—whether they are pending, resolved, or the complete set of issues. This page features three submenus: "All Issues," "Issues in Progress," and "Resolved Issues." Selecting a submenu displays a list of issues corresponding to that category's status, with "All Issues" set as the default view. The monitoring page is shown in Figure 10 below.

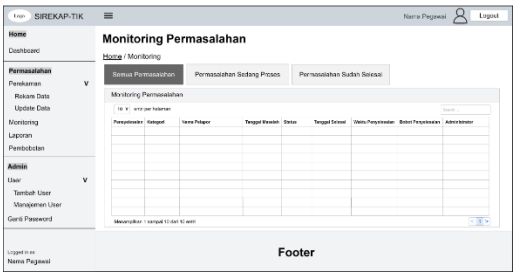


Figure 10. Design of the Monitoring Page for All Problems

F. Report Page Design

The report page is used by administrators to generate reports detailing ICT issues within a specified timeframe, as well as the resolution status of ICT issues reported by employees. The page features a form for selecting a date range and a print button. The data report page is shown in Figure 11 below.

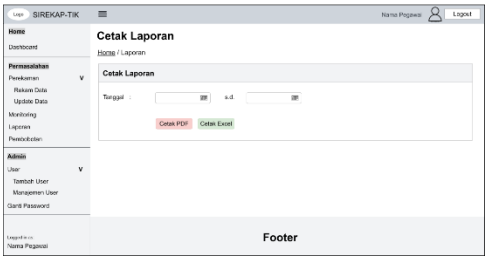


Figure 11. Report Page Design

G. Weighting Page Design

The weighting page is used by administrators to configure issue weightings and set quarterly achievement targets for the year. The weighting section consists of a form specifying the resolution type (KPP or Non-KPP) and the assigned weights based on resolution timeframes—ranging from same-day resolution to resolution taking more than five working days. The target section consists of a form specifying the target year and the targets for each quarter (Q1 through Q4) of that year. The weighting page is shown in Figure 12 below.

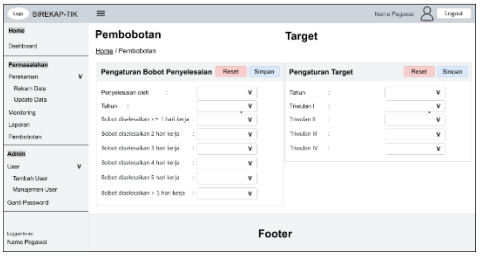


Figure 12. Weighting Page Design

F. System Implementation Using Iterative Incremental Model

The implementation phase of the developed Web-Based Information Technology Complaint Management System was carried out using the Iterative Incremental Model approach. This model enables system development to be performed gradually through several incremental cycles, where each cycle produces a functional version of the system that can be evaluated and improved. The implementation process was conducted iteratively to ensure that the developed system continuously aligned with the operational requirements of the East Jakarta Medium Tax Office.

The first increment focused on developing the fundamental components of the system, including user authentication, user management, database configuration, and basic system architecture. At this stage, the main objective was to establish the system foundation and ensure that users could access the application according to their respective roles. The database structure was implemented to support the storage of user information, complaint data, complaint categories, and system activity records.

The second increment focused on implementing the core complaint management functionalities. In this stage, the complaint submission module was developed to allow users to submit information technology-related complaints through a web-based interface. The implemented features included complaint form submission, complaint categorization,

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attachment of supporting information, and automatic recording of complaint submission time. The administrator module was also developed to allow officers to review and manage incoming complaints.

The third increment involved developing complaint monitoring and resolution management features. The system was enhanced with complaint status tracking, response management, and complaint history features. Administrators could update complaint progress through different resolution stages, while users could monitor the progress of their submitted complaints. This increment aimed to improve transparency and efficiency in the complaint handling process.

The fourth increment focused on implementing reporting and evaluation features. At this stage, the system was equipped with functions for generating complaint reports based on specific categories, periods, and resolution statuses. These features supported administrators in analyzing complaint trends and evaluating the effectiveness of information technology service management within the organization.

After each increment was implemented, an evaluation process was conducted involving system functionality review and feedback collection from stakeholders. The evaluation results were analyzed to identify required improvements, which were then incorporated into the next iteration cycle. This continuous refinement process allowed the system to adapt to changing requirements and ensured that each developed increment provided additional value to users.

Through the implementation of the Iterative Incremental Model, the development process of the complaint management system became more flexible and manageable. Each development cycle produced a more complete system version, allowing early identification of limitations and continuous improvement until the final system version fulfilled the requirements of the East Jakarta Medium Tax Office.

A. Login Page

Before accessing the application, the administrator is directed to the login page. This page features two input fields for the username and password. If the entered username and password are correct, the administrator can successfully log in to the application. The login page is shown in Figure 13 below.

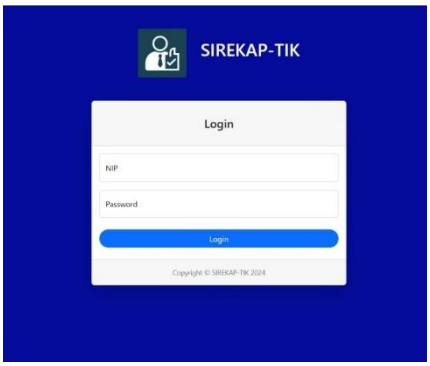


Figure 13. Administrator Login Page

B. Dashboard Page

Upon successful login, the administrator dashboard is the first page displayed in the application. On this dashboard, administrators can view pending, completed, and all issues, as well as the total number of issues per month, performance achievement percentages, weightings, and targets. Administrators can click on any category—completed, pending, or all issues—to be redirected to the monitoring page corresponding to the selected category. In the "total issues per month" section, administrators select a year filter to view the monthly issue totals in a bar chart format. In the "performance achievement percentage" section, administrators select filters for the section/user, year, and quarter to view performance achievement percentages based on the selected criteria. In the "weighting" section, administrators select completion and year filters to view weightings based on the selected criteria. In the "target" section, administrators select a year filter to view quarterly targets based on the selected criteria. The dashboard page is shown in Figure 14 below.

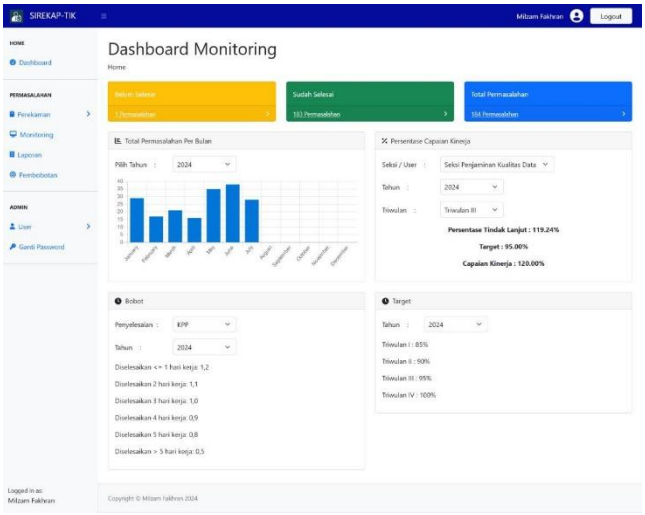


Figure 14. Administrator Dashboard Page

C. Data Entry Page

On this page, administrators can record issue details, including the resolution category (resolved at the KPP or non-KPP), issue category, reporter's name, date of the issue, and the ICT issue reported by the employee. The data entry page is shown in Figure 15 below.

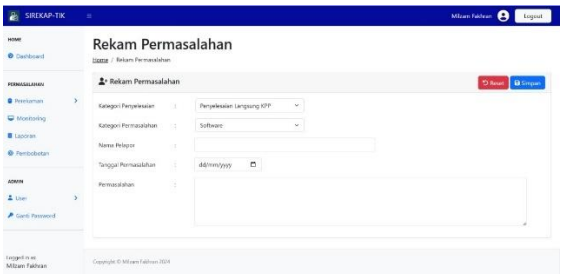


Figure 15. Issue Recording Page

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D. Data Update Page

On this page, the administrator updates previously recorded ICT issue data. The administrator can view a table listing the issues—showing their processing or completion status—along with the resolution category, issue category, reporter's name, issue date, issue status, the administrator in charge, and a "process" button. When the administrator clicks "process" for a specific issue, they are directed to a page displaying the selected issue; this page follows the layout of the data recording screen but includes two additional input fields that must be filled out: the solution and the date the ICT issue was resolved. The data update page is shown in Figure 16 below.

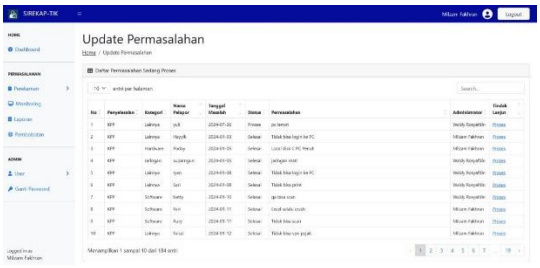


Figure 16. Issue List Data Update Page

E. Monitoring Page

On this page, administrators can monitor ICT issues—whether they are unresolved, resolved, or the complete set of issues. There are three submenus: "All Issues," "Issues in Progress," and "Resolved Issues." Clicking a submenu displays a list of issues corresponding to that submenu's category; the "All Issues" submenu is displayed by default. The monitoring page is shown in Figure 17 below.

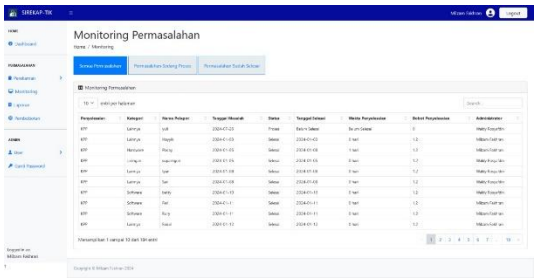


Figure 17. All Issues Monitoring Page

F. Reports Page

On this page, administrators can view and/or print reports detailing ICT issues within a specified timeframe, as well as performance metrics regarding the resolution of ICT issues reported by employees. Administrators can generate these reports in PDF or Excel format. The reports page is shown in Figure 18 below.

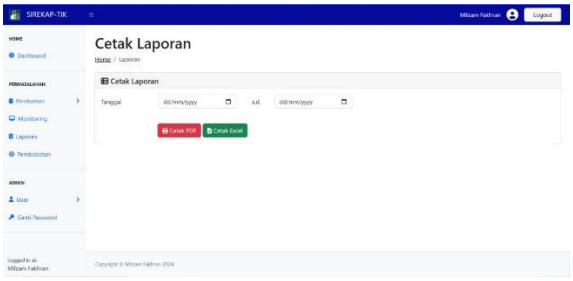


Figure 18. Reports Page

G. Weighting Page

On this page, the administrator assigns weights to issues based on the selected resolution and year filters and sets quarterly achievement targets for the year. The weighting page is shown in Figure 19 below.

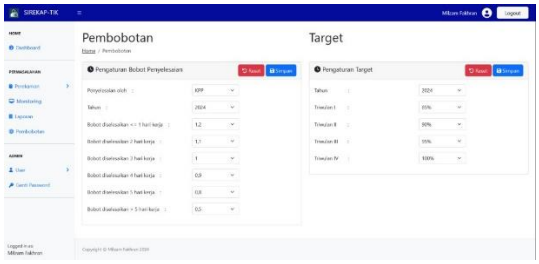


Figure 19. Weighting Page

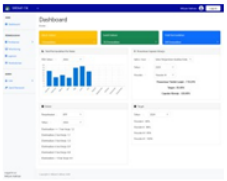
G. Application Testing

Application testing is a stage conducted to evaluate the functionality and performance of each feature developed in the system. This stage aims to ensure that every page, module, and system component operates according to the predefined requirements. The testing process focuses on verifying the consistency between user inputs and the outputs generated by the system. In this study, application testing was performed using the Black Box Testing method, which evaluates system functionality based on input and output behavior without considering the internal structure or source code implementation.

A. Administrator Login Page Testing

Testing of the administrator login page was conducted to ensure that the user authentication process functioned properly and that the system was able to validate the administrator account credentials. The testing was performed using several input scenarios, including valid username and password combinations as well as invalid credential inputs. The test results of the administrator login page are presented in Table I.

TABLE I. ADMINISTRATOR LOGIN PAGE TESTING

Activity	Expected output	Result
Login page display	Displaying the login page	 [✓]Succeed
Log in using the correct NIP and password.	After clicking the login button, you are redirected to the dashboard page.	 [✓]Succeed
Log in with an incorrect username and a correct or incorrect password.	After clicking the login button, a "NIP not registered" warning appears, and after clicking "OK," the user is redirected back to the login page.	 [x] Fail
Log in with the correct username and the wrong password.	After clicking the login button, an "Incorrect password" warning appears, and after clicking "OK," the user is redirected back to the login page.	 [x] Fail

B. Web Performance Testing

To assess a website's performance, an evaluation was conducted using page load time extensions across three different browsers: Google Chrome, Microsoft Edge, and Mozilla Firefox. This evaluation aimed to identify differences in page load times among the browsers. The results provide information regarding the efficiency of each browser in loading the website. Table II below presents the results of the login page load speed evaluation using these various browsers.

TABLE II. BROWSER TESTING

No	Browser	Result
1.	Google Chrome	It takes approximately 0.137 seconds to access each page.
2.	Microsoft Edge	It takes approximately 0.146 seconds to access each page.
3.	Mozilla Firefox	It takes approximately 0.145 seconds to access each page.

V. CONCLUSION

This research successfully developed a Web-Based Information Technology Complaint Management System to support the management of ICT-related complaints at the East Jakarta Medium Tax Office. The developed system was designed to overcome limitations in the existing manual complaint administration process, particularly related to complaint recording, resolution monitoring, performance calculation, and reporting activities.

The system development was implemented using the Iterative and Incremental Model, which enabled the application to be developed gradually through several increments. Each increment produced additional system functionalities, including complaint submission and management, complaint monitoring and resolution tracking, as well as reporting and evaluation features. The iterative development process allowed continuous improvement based on stakeholder feedback, ensuring that the developed system aligned with organizational requirements.

The implementation of the system provides an integrated platform for managing ICT complaints, allowing administrators to record complaint data, monitor resolution progress, document handling activities, calculate performance achievements, and generate reports more efficiently. The system also improves data accessibility and reduces the limitations associated with spreadsheet-based complaint administration.

Based on the application testing results, each implemented feature was able to operate according to the specified requirements. The functional evaluation using Black Box Testing demonstrated that the system components, including authentication, complaint management, monitoring, reporting, and weighting features, functioned properly. Furthermore, web performance testing showed that the system was able to provide fast page access across different browsers, indicating that the developed application was feasible for operational use.

Therefore, the developed Web-Based Information Technology Complaint Management System can support more effective, transparent, and structured ICT complaint management processes at the East Jakarta Medium Tax Office. The system contributes to improving administrative efficiency and provides a foundation for continuous improvement in ICT service management within government institutions.

Based on the results of this research, several suggestions can be considered for further system development and improvement.

First, future research may enhance the system by integrating additional features such as automatic notification mechanisms through email or instant messaging platforms. This feature can improve communication efficiency by notifying users and administrators regarding complaint submissions, status changes, and resolution completion.

Second, the system can be further developed by implementing advanced data analysis capabilities, such as complaint trend analysis and predictive analytics. These features may assist administrators in identifying recurring ICT problems and supporting preventive decision-making for improving IT service quality.

Third, future improvements may include integration with existing organizational information systems to enable automatic synchronization of user data, service records, and performance evaluation data. Such integration can minimize

duplicate data entry and improve information consistency across organizational platforms.

Finally, further evaluation involving a larger number of users and implementation periods is recommended to measure the system's usability, effectiveness, and long-term impact on ICT complaint management performance. Continuous refinement using the Iterative and Incremental Model can be applied to accommodate evolving organizational needs and ensure that the system remains relevant and sustainable.

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