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Development of A Web-Based Employee Performance Monitoring and Reporting System to Enhance Productivity and Performance Evaluation

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ABSTRACT

The Attorney General's Office, as a law enforcement institution, requires optimal employee performance to achieve effectiveness in law enforcement. However, the current employee performance monitoring and reporting processes at the Binjai District Attorney's Office are still manual, leading to inefficiencies, lack of transparency, and difficulties in objective evaluation. This research aims to develop a Web-Based Employee Performance Monitoring and Reporting System as a solution to address these issues. The system is designed to improve the accuracy, transparency, and integration of performance data, thereby enabling more objective and measurable evaluations. With this system, leaders can provide accurate feedback, identify performance problems earlier, and ultimately enhance employee productivity and the overall performance of the Attorney General's Office. The research has successfully developed a web-based system with an interface that allows centralized management of user data, employee information, tasks, and performance evaluations. The implementation of this system is expected to significantly positively impact operational efficiency and support the achievement of organizational goals in more effective and efficient law enforcement.

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INTRODUCTION

The Attorney General's Office, as a law enforcement institution with a strategic role in resolving various legal cases, relies heavily on the optimal performance of all its employees to achieve effective and efficient organizational goals. Employee performance within the Attorney General's Office plays a vital role in supporting the entire legal process, from the investigation and prosecution stages. Therefore, a systematic, accurate, and timely performance evaluation system is essential to ensure that each employee optimally carries out their duties and responsibilities, which in turn will support the overall effectiveness of law enforcement.

However, in practice, the Binjai District Attorney's Office, located at Jl. Tengku Amir Hamzah No. 378, Jati Makmur, North Binjai District, Binjai City, North Sumatra, still faces significant challenges in monitoring and reporting employee performance. Existing processes are still largely manual and fragmented. This directly results in operational inefficiencies, a lack of performance data transparency, and difficulties in obtaining accurate and real-time information. Furthermore, differences in assessment standards between departments or work units often pose a major obstacle to conducting objective and comprehensive evaluations.

Given these issues, the development of a web-based information system for monitoring and reporting employee performance emerged as a prospective and relevant solution, in line with current information technology developments. This system is expected to improve the accuracy, transparency, and integration of employee performance data, enabling more objective and measurable evaluations. With this system, leaders can provide more precise feedback, motivate employees, and identify potential performance issues early for rapid remedial intervention. Ultimately, the implementation of this system is expected to have a significant positive impact on increasing employee productivity and the overall performance of the Prosecutor's Office, thereby supporting the achievement of organizational goals in more effective and efficient law enforcement.

LITERATURE REVIEW

System Monitoring Performance

A system is a collection of elements that interact and work together to achieve a specific goal (J.P. Alter 2021). The concept of a system is fundamental in various disciplines, from computer science, management, engineering, to the social sciences. A system can be identified by several of its main characteristics, namely the presence of components, interactions between components, a clear goal, and an environment that influences it M.G. Walker (2020). Monitoring is the process of systematically and continuously collecting data and information about a particular object, system, or phenomenon to observe changes, evaluate performance, and identify anomalies (JP Alter, 2021). The main objective of monitoring is to gain a deep understanding of the status and behavior of what is being observed, thus enabling appropriate decision making and necessary interventions (MG Walker,2020) Reporting is the process of delivering structured and relevant information to stakeholders to support decision-making, accountability, and transparency (R Yulianti and S.Hadi, 2020). Reporting is not simply the presentation of raw data, but involves transforming data into meaningful, understandable, and reliable information (AD Saputri And SB Santoso). The primary objective of reporting is to provide a clear and accurate picture of an entity's performance, status, or activities over a specific period of time. Performance refers to the results or level of success achieved by an individual, group, or organization in carrying out their duties and responsibilities in accordance with established standards (NS Putri and Sb Santoso, 2022). The concept of performance is multidimensional and can be measured from various aspects, such as efficiency, effectiveness, quality, and productivity (B, Susanto and A. Hidayat, 2022). Achieving optimal performance is the main goal for every entity, whether in the private or public sector.

Website Application

A website is a page of information available via the internet that can be accessed worldwide as long as there is an internet connection. Each page has a unique address called a URL (Uniform Resource Locator), allowing users to access it easily (S. Antar et al, 2025). A website is a page that can be accessed via the internet by users through software. A website is a page containing information that is displayed by a browser such as Mozilla Firefox, Google Chrome or others (M. Setyaningrum,et al, 2025). Website-based applications are created using the PHP (Hypertext Preprocessor) computer language. Interactive and dynamic features are

essential for websites developed using PHP. Because websites are dynamic, their content can adapt to specific circumstances, such as displaying different items to each visitor (MP Sidik et al, 2024). Meanwhile, the website's interactive features allow it to provide feedback to consumers by displaying product search results. PHP is a server-side programming language, meaning the web server executes PHP scripts and returns the results to the user's browser. Therefore, to begin development with PHP, access to a server that supports PHP is required. (IM WIdiarta, 2023)

MySQL is a SQL database management system (database) software. Unlike conventional databases such as .dat, .dbf, .mdb, MySQL has the advantage of being multithreaded and multi-user, and supporting network systems. MySQL is distributed free of charge under the GNU General Public License (GPL), but there is also a commercial version for certain groups who want it S Afrizal et Al (2024). Unified Modeling Language (UML)is a standard visual modeling language used in software engineering and information systems development. UML provides a rich and diverse notation for describing, designing, and documenting various aspects of a software system or information system. It helps in understanding, communicating, and documenting system design effectively. (S.Esti et al, 2024)

Employee

Employees, often referred to as human resources (HR), are the most important asset for every organization Abdul Khaliq et al (2022). They are individuals who contribute their energy, thoughts, and expertise to achieve organizational goals, in return for the compensation they receive. The role of employees is fundamental because they are the ones who run operations, create innovation, and interact directly with customers or other stakeholders (R. Sari, 2020). In the modern context, employees are not only seen as a factor of production, but as strategic partners who have the potential to continue to grow and provide added value. Employee performance monitoring refers to the systematic process of collecting, analyzing, and evaluating data related to employees' tasks, behaviors, and achievements in order to assess their contribution to organizational goals. According to TA Kurniawan (2020), effective performance monitoring not only ensures that employees meet established standards but also identifies areas where training or support is needed. Traditional monitoring methods, such as manual reporting and periodic supervisor assessments, are often time-consuming and prone to human error. Recent trends show a shift toward automated and web-based systems, enabling real-time tracking and transparent evaluation (Putra E, et al, 2022).

Web-based applications have become a cornerstone in organizational management due to their accessibility, scalability, and cost-effectiveness. As stated by S. Mulyani et al (2020), web-based systems allow remote access to performance data, enabling managers to monitor productivity regardless of geographical location. Such systems integrate features like automated data entry, task tracking, and visual dashboards, which reduce administrative workload and enhance decision-making speed (Hermansyah et al, 2022). In the context of employee performance, web-based platforms provide centralized data storage, real-time analytics, and easy report generation, leading to improved operational efficiency. Performance evaluation is a structured approach to assessing an employee's effectiveness in fulfilling job responsibilities. Several frameworks exist, such as the Balanced Scorecard (Hermansyah et al, 2025) Key Performance Indicators (KPIs), and the 360-Degree Feedback method. According to R. Sari and Dk Wijaya (2020), using a combination of qualitative and quantitative metrics yields more accurate evaluations. Web-based systems have been adapted to automatically calculate KPIs based on data inputs from daily operations, reducing subjectivity and bias in performance reviews.

Integration of Monitoring and Reporting in Web Systems

The integration of monitoring and reporting functions in a single web-based system offers a holistic approach to performance management. According to TA Kurniawan (2020), real-time monitoring combined with automated reporting enables faster identification of performance gaps and the implementation of corrective measures. These systems can generate visual performance reports, such as charts and dashboards, to simplify data interpretation for managers. Furthermore, automated alerts and periodic summary reports ensure continuous engagement with performance data, fostering a culture of accountability and continuous improvement. Research has shown that organizations adopting web-based monitoring and reporting systems experience measurable improvements in productivity. A study by Mahmood et al. (2022) found that real-time feedback and transparent reporting increased employee motivation, reduced task completion time, and enhanced overall output quality. By enabling data-driven decision-making, such systems help managers allocate resources more effectively, prioritize tasks, and set realistic goals, thereby improving both individual and organizational performance.

METHODS

In this research, the Waterfall Model was applied because of its structured approach to software development. This method requires each stage to be completed sequentially, meaning one stage must be fully completed before moving on to the next.

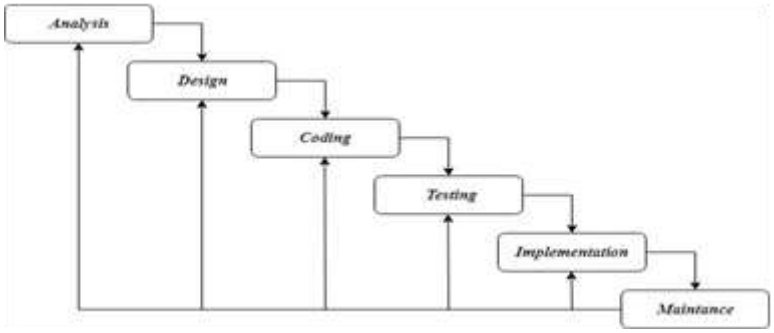

Figure 1. Research Stages

The Waterfall method is a highly structured approach to developing systems, consisting of several sequential stages:

- System Analysis: This initial stage focuses on gathering detailed information about software requirements. This information can be obtained through surveys, interviews, or observations. The collected data is then analyzed to produce comprehensive software requirements specifications.
- System Design: At this stage, a system design is created to provide a comprehensive overview of the development steps that will be taken.
- System Implementation: This stage involves building the application using an appropriate programming language and database, based on the results of the previous analysis and design.
- System Testing: Once implementation is complete, the system will undergo a thorough testing process. The goal is to verify functionality and identify potential issues or bugs in the operating system.
- Maintenance: The final stage is regular system maintenance. This is done to improve system effectiveness and performance, including adding new features as needed by users.

This research applies Object-Oriented modeling using UML (Unified Modeling Language), where the diagrams used include Use Case Diagrams and Activity Diagrams. Use case diagrams serve to visualize the interactions between actors (users or external systems)

and various activities or functions within the system being designed. These diagrams specifically outline the processes within the system and how actors interact with each process. Figure 2 presents a use case diagram of the system being developed.

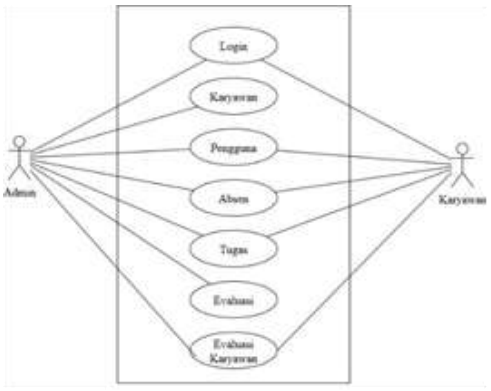

Figure 2. Use Case Diagram

Activity Diagrams in this system serve to visualize the entire workflow, showing the starting point, various possible decisions that can be taken, and how each activity process ends.

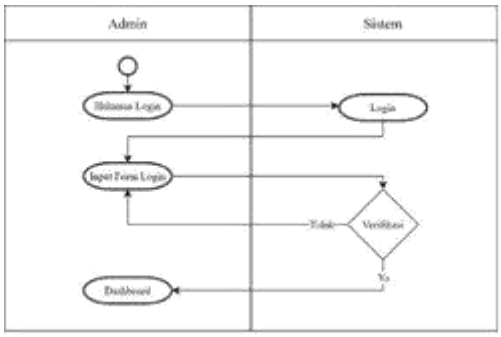

Figure 3. Log in Activity Diagram

This image is an activity diagram depicting the login flow for the Admin role. The process begins with the "Login Page," then the Admin "Inputs the Login Form," and then the system performs "Verification." If verification fails ("No"), the Admin returns to the "Input Login Form." If verification is successful ("Yes"), the Admin is redirected to the "Dashboard."

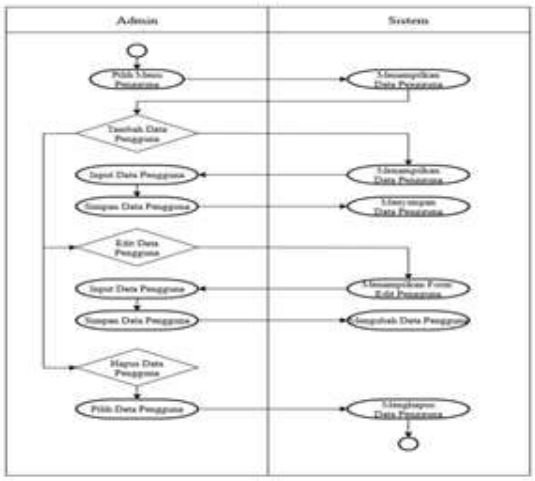

Figure 4. User Activity Diagram

This image is an activity diagram showing the flow of user data management by an Admin. The Admin begins by selecting "Select User Menu" and then "Show User Data." From there, the Admin can choose to "Add User Data" (via "Input User Data" and "Save User Data"), "Edit User Data" (via "Input User Data" and "Save User Data"), and "Edit User Data" (via "Save User Data"). "User" (via "Input User Data" and "Save User Data"), or "Delete User Data" (via "Select User Data"). Every Admin action will be responded to by the System by displaying, saving, changing, or deleting user data.

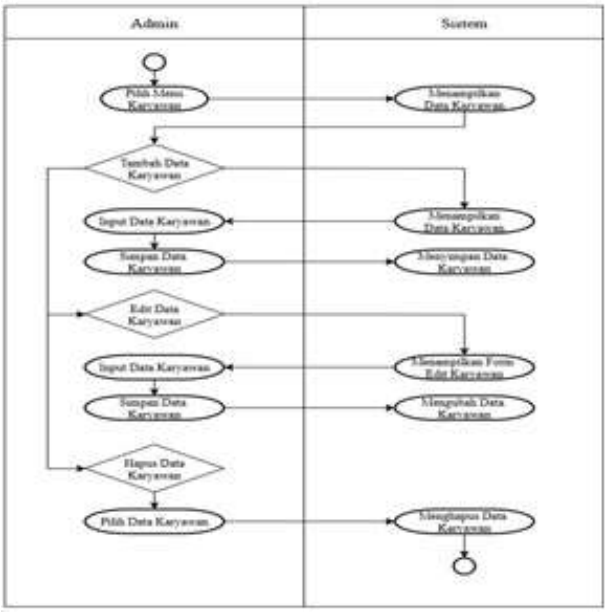

Figure 5. Employee Activity Diagram

This image is an activity diagram that outlines the flow of employee data management by the Admin. The process begins when the Admin "Selects the Employee Menu" which causes the system to "Display Employee Data". From the data display, the Admin can choose to "Add Employee Data" (via "Input Employee Data" and "Save Employee Data"), "Edit Employee Data" (via "Input Employee Data" and "Save Employee Data"), or "Delete Employee Data" (via "Select Employee Data"). Each Admin action will be responded to by the System by displaying, saving, changing, or deleting employee data.

RESULTS AND DISCUSSION

In this research, a Monitoring and Control System has been successfully developed. Web-Based Employee Performance Reporting is designed to support increased productivity and performance evaluation. The author presents the final results of the developed system in the form of an application interface, one of the main features of which is as follows:

Interface

Login View – Admin, This image shows a simple login page with an office background. Modern. In the center, there's a dark login box titled "Sign in," followed by input fields for "Username" and "Password," and a "Sign in" button at the bottom.

Figure 6. Login View

Dashboard View – Admin, This image shows the admin dashboard page which provides a summary Employee performance and attendance. Key metrics such as attendance summary, assigned tasks, in-progress tasks, and completed tasks are displayed, along with weekly graphs for attendance, assigned tasks, and completed tasks. There's also a list of employee performance and a list of absent employees. On the left side is a navigation menu with options such as User Management, Employee Management, Task Management, and Performance Evaluation Management.

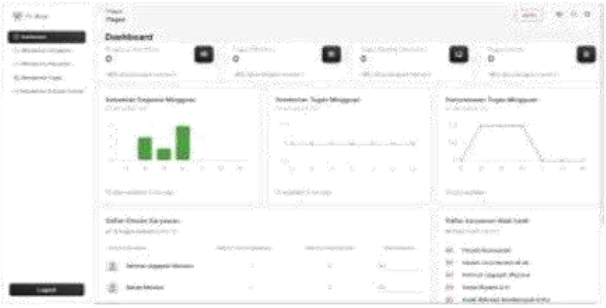

Figure 7. Dashboard View – Admin

User Management View – Admin, This image shows the "User Management" page in the admin interface, which is used to manage user master data. This page displays a list of users in a table, including their serial number, name, username, and status. For each user, there are "Change Password" and "Delete" buttons, allowing the admin to perform actions related to that user's account. There are also options for setting the number of entries displayed and a search field for filtering user data.

Figure 8. User Management View – Admin

Employee Management View – Admin, This image shows the "Employee Management" page in the admin interface, which functions to manage employee master data. This page displays a list of employees in tabular form, including their serial number, name, and position. For each For employees, there are "Edit" and "Delete" buttons. There's also an

"Add Employee" button for adding new entries, as well as options for setting the number of entries displayed and a search field.

Figure 9. Employee Management View – Admin

Task Management View – Admin, This image shows the "Task Management" page in the admin interface, which This page is used to manage task master data. This page displays a table of tasks, including the sequence number, task name, responsible employee, and task status. Each task has "Edit" and "Delete" buttons. There's also an "Add Task" button for adding new entries, as well as options for setting the number of entries displayed and a search field.

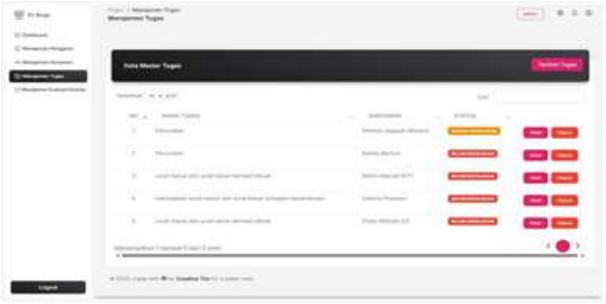

Figure 10. Task Management View – Admin

Performance Evaluation View – Admin, This image shows the "Performance Evaluation" page in the admin interface, which is used to manage performance evaluation master data. Currently, the data table is empty with the message "No data available in this table." There is an "Add Performance Evaluation" button for adding new data, as well as options for setting the number of entries displayed and a search field.

Figure 11. Performance Evaluation Display – Admin

Dashboard View – Employees, This image shows the dashboard for employee roles, which currently shows There is no assignment assigned ("No assignments yet"). There is a "View Assignment History" link to view previous assignment history. On the left side, there is a navigation menu with the options "Dashboard," "Daily Attendance," "Assignment List," and "Assignment History.

Figure 12. Dashboard View – Employees

Hardware and Software Specifications

1. Hardware Specifications a.CPU
   - Processor AMD Athlon Silver 305U with Radeon Graphics 2.30 GHz
   - Installed RAM 4.00 GB (3.42 GB usable)
   - 500 GB hard diskKeyboard
   - Mouse
   - Internet connection with a speed of 100 MBPS

2. Software Specifications
   - Google Chrome
   - Enterprise Architect 67
   - Mendeley
   - Figma Web App
   - Draw.io

Testing

Black box testing is conducted to determine the functional suitability of the developed application's output by observing the execution results of the test data. The following are the results of black box testing:

Table 1. Black Box Testing

No.	Test Scenario	Expected results	Test Results
1.	Running a Website	Enter the page login website	Succeed
2.	Enter your username and password	Enter the main page	Succeed
3.	Select the dashboard menu	Displaying the dashboard page	Succeed
4.	Choose menu management users	Displaying user data	Succeed
5.	Choose menu management employee	Display employee data	Succeed
6.	Choose menu management task	Displaying task data	Succeed
7.	Choose menu management performance evaluation	Displaying performance evaluation data	Succeed
8.	Choos add user and save	Showing new form data user and back to page users	Succeed

CONCLUSION

Optimal performance of employees in the Prosecutor's Office is crucial for the effectiveness of law enforcement. However, the Binjai District Attorney's Office faces challenges in performance monitoring and reporting, which are still manual and unintegrated,

leading to inefficiency and a lack of objectivity. Therefore, the development of a web-based information system is an urgent solution to improve the accuracy, transparency, and objectivity of performance evaluations. This system is expected to increase employee productivity, enable better decision-making, and ultimately support the achievement of organizational goals for more effective and efficient law enforcement.

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