

Digitalization of Employee Performance Appraisal System: Ensuring Fairness and Transparency in Human Resource (HR) Practices in Steel Construction Company

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Abstract – Digital transformation in human resource department (HRD) within performance appraisal process is initiated from employee management and supported by the commitment of leaders to create aspects of openness and fairness. In this context, PT. X Surabaya is a steel construction company that still carries out employee performance appraisal process manually, causing problems such as being considered unfair, non-transparent, and inaccurate in the assessment process, as well as frequent delays in the process. This causes feelings of unfairness and suspicion from employees, leading to a negative work atmosphere and impacting productivity and performance. Therefore, this research aims to design employee performance appraisal information system by applying Waterfall model as the development method. The novelty was the integration of human resource (HR) transformation from traditional to digital, by prioritizing the principles of fairness and transparency in the context of employee performance appraisal. This result showed that web-based performance appraisal information system effectively managed the appraisal process digitally, enabling leaders to monitor employee performance and enhance time efficiency. The existence of a system prioritizes transparency and fairness because the assessment process was carried out in two directions, from leaders to employees. Therefore, employee welfare and job satisfaction were improved due to effective and objective assessment.

Keywords: Information System, Performance Appraisal, Web Applications

I. INTRODUCTION

Strong company performance is improving competitive advantage and increasing the likelihood of outperforming competitors in the market. Performance and increase in competitiveness are influenced by the existence of quality human resource (HR) factors. This can be accompanied by the availability of reliable, relevant, accurate, timely, and complete data to optimize and increase the decision-making process as part of the management strategy (Raja et al., 2025). Even though the daily operations of a company have been supported by modern technology, human workforce factor to produce optimal performance cannot be ignored. The form of optimal HR performance is the assessment of behavior, achievements, and quality of work. Employee performance evaluation is essential to enhance a sense of responsibility, ensure adherence to work standards and legal regulations, as well as promote the delivery of quality outputs (Utama, 2021). The appraisal is a standard of assessment used to determine the quality of performance of employees. This complicated process requires serious consideration to produce the right decision (Habibi & Manurung, 2023). According to Quoting Sutrisno's statement in Khaeruman et al. (Khaeruman et al., 2023), employee performance can be measured based on several indicators, namely (1) Quality Factor reflects the degree to which the outcomes of implemented activities attain perfection or fulfill the intended objectives, (2) Quantity is a measure of the amount of value generated, such as the value of currency in the form of rupiah, units, or cycles of activities, (3) Timeliness is a

measure of the progress of completed activities in relation to the conformity and accuracy with the predetermined schedule, (4) Cost Effectiveness is the utilization and use of resources in economic value for the implementation of maximum activities in achieving high results or reducing losses, (5) Need for Supervision is an assessment of employee understanding and independence in conducting job functions without continuous direction and supervision, and (6) Interpersonal Impact is an assessment of employee in maintaining self-esteem, reputation, and ability to work with others. Garengo et al. (2022) stated that cultural routine factors and work behavior were used to determine the use of performance measurement.

Career development and performance appraisal are two important aspects of HR management. Performance appraisal refers to the evaluation of employee to determine the extent to which assigned goals and tasks in the workplace have been accomplished. The variables measured were employee achievement, competence, and behavior. This provides constructive feedback to employees, identifies areas of improvement, and plans the actions needed to improve performance (Nurramadhania, 2023).

The relationship between organizational performance and the use of information technology, such as HR Information System, showed that the mastery of information technology is an absolute requirement for a company. Several companies use HR information system to enhance the effectiveness and efficiency of operational activities. An information system can be interpreted as a process or activity to inventory the conditions and circumstances of HR. Therefore, the company can determine the quantity and quality of problems faced in making management policies related to aspects of HR. Information system is a methodical process for gathering, accessing, storing, and updating the required data (Rosadi & Purnomo, 2020).

The implementation of HR information system has a major impact on influencing administrative tasks. This role can develop into a strategic partner that contributes to the overall success of the company by increasing efficiency, productivity, and employee satisfaction (Bindra et al., 2025). There are

challenges, such as factors of change in the organizational climate culture. These aspects can be overcome to achieve successful HR management transformation (Saputri et al., 2024). The challenges faced in implementing HR information system include adapting the technology to the local context, particularly with respect to employment regulations and workplace cultures. Additional barriers arise from organizational unpreparedness to adopt new technologies, as well as factors such as restrictive local regulations, employee behavior, communication gaps, inflexible policies, and technologies that are not easily understood by non-specialists (Wartono, 2025).

The problem considered is performance appraisal process at PT. X. Based on interviews with management, employee performance appraisals can only be conducted by management. This situation leads to prejudice and negative feelings because performance appraisals are perceived as having an element of subjectivity and give rise to suspicion and feelings of unfairness towards department and company leaders. The feelings of suspicion and unfairness led to dissatisfaction, impacting employee performance. Furthermore, the process is conducted through Excel forms and is prone to human error. This process is often not conducted regularly, which affects the ability to provide objective evaluations. In this context, objective performance appraisals are highly valued by companies in influencing adjustments to existing compensation components.

Digital transformation is a major trend in the modern business environment, requiring industries to enhance internal and external business processes. The adoption requires organizations to implement new technologies and change the method of working structure and culture. Changes in work culture through digital transformation strengthened the values of collaboration and openness, facilitating a more effective innovation process (Fahmi, 2024). Digital transformation drives changes in HR aspect to create a more open, collaborative, and adaptive work culture. This variable enhances the autonomous and dynamic roles of employees through greater openness.

The problems considered are in line with the theory of HR policies. Effective HR management policies consist of several key

elements, such as proper selection and recruitment, training and development, fair and competitive compensation, clear promotion and career policies, regular and performance evaluations, as well as organizational culture (Idrus et al., 2023). Rosadi et al. (Rosadi & Purnomo, 2020) stated that employee performance evaluation contained information about employee skills, competencies, talents, performance levels, and growth potential. Correct and precise information is needed in making long-term planning decisions regarding potential individuals.

A website-based information system was designed and created to assist PT. X in evaluating and assessing performance of employees. This system has a feature where performance assessment process is carried out by the leader and employees in the same organizational line. Another feature is a reminder notification that helps system users in conducting assessments promptly. The results can be seen directly in reducing suspicion and subjectivity. Performance assessment process on the website also helps HRD in the efficiency of the data collection process and recording of compensation bonuses.

The novelty lies in the integration of HR transformation from traditional to digital, prioritizing the principles of fairness and transparency in the context of employee performance appraisals. This research emphasizes the systematic integration of fairness and transparency into the design of the system. Practical insights and a replicable framework are offered for similar industries in ensuring objective performance management through the use of information system.

II. METHODS

The software development used in designing the application was the waterfall method (Faradita et al., 2024). This “classic life cycle” model used a systematic and sequential method to develop software (Musthofa & Adiguna, 2022). The phases in waterfall method are as follows (Supiyandi et al., 2022).

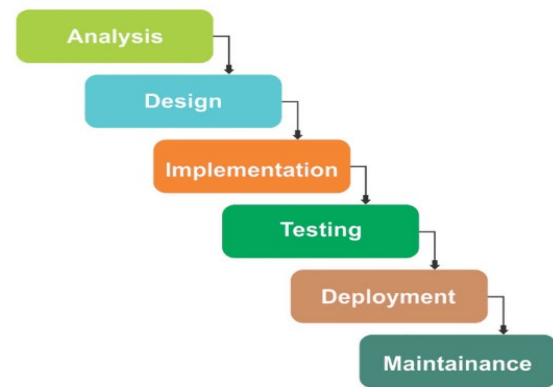


Figure 1: Phases in Waterfall Model

The phases of waterfall method are used in the implementation and development of employee performance appraisal information system. The explanation of the phases includes (1) Analysis Phase: the research team discusses with company managers through interviews regarding the need for an information system capable of handling performance appraisals. User needs were determined using an interview method conducted with leaders and HRD. PT. X has five departments, namely marketing, production, accounting & finance, general affairs, and PT. X Institute Strategic Department.

In interviews related to user needs, results were obtained in the form of data and information related to personnel administration, features, and modules of the information system to be developed. Developers collected data on employee assessment policies and criteria, salary and compensation structures, absence records, levels of employee participation in projects and tasks, as well as procedures, rules, and methods for performance evaluation, (2) Design Phase: The core activity of the design phase, following the identification of user needs, includes architectural design, analysis and modeling using UML, user interface design, and the specification of technical requirements for the software. This phase also includes designing an assessment website interface for calculating scores and designing report formats, such as assessment reports 3. Implementation is the phase of writing the program code. The main module focuses on designing employee performance assessment application with functions consistent with the company’s needs. The developed system comprises core modules, including employee

data input and performance indicator module, an assessment accessible to HR, supervisors, and other evaluators. At the implementation phase, this website was developed using Hypertext Markup Language (HTML) and Hypertext Pre-Processor (PHP) scripting languages through MySQL. (4) Testing Phase: This phase is conducted to evaluate the designed application and user needs. The process is conducted using usability methods on users, namely management, human resource department (HRD) representatives, and employees. The testing determines bugs or errors after the application is implemented. (5) Implementation Phase: The implementation phase is the final phase, where the finished product or program is made available to clients or end-users. The phases considered include providing training for all user access, inputting performance assessment criteria data into the system, and simulating the implementation of the process. This includes creating user manuals and organizing training sessions for company staff. (6) Maintenance Phase: The activities comprise system maintenance, such as error correction, perfecting the implementation of units according to new needs, and planning for future application development.

This performance management system is integrated with payroll to assist companies in making decisions regarding salary increases and incentive bonuses for high-performing employees. The salary adjustment and incentive award process is based on a comprehensive performance evaluation.

Table 1: Employee Performance Assessment Standards

Total Point	Predicate	Description
80 - 100	A	Very Good
60 - 79	B	Good
40 - 59	C	Fair
20 - 39	D	Poor
0 - 19	E	Very Bad

Source: Company Primary Data

The individual receives a warning indicating that performance over the past month has been unsatisfactory and must be improved immediately to meet the minimum fair

performance rating when employee scores below 40 points. For scores above 40, the company will provide a reward the following month, included in the monthly salary component. Adjustments are made each month based on the monthly performance evaluation.

The system design depends on interviews regarding user needs in the design of information system using Unified Modeling Language (UML), including Use case diagrams, Class Diagrams, Activity Diagrams, and Sequence Diagrams. A Use Case Diagram describes the interaction relationship between the system and the actor (Fajerin & Mulyono, 2020). This shows system modeling through user and system interactions (Musthofa & Adiguna, 2022). The design of the use case diagram in this application is as follows.

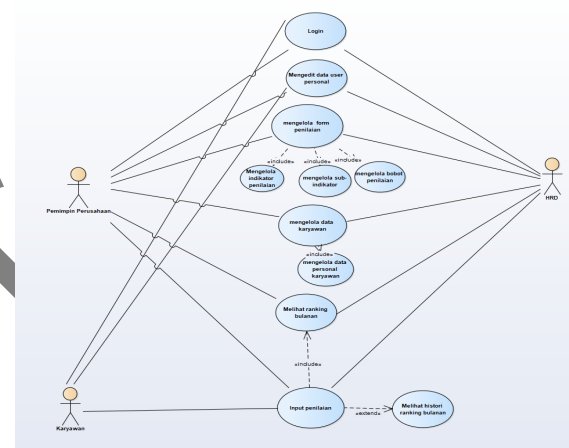


Figure 2: Use Case Diagram of Employee Performance Appraisal System.

Based on the use case diagram, there are three actors in this system, namely the company leader, HR admin, and company employees. The features of adding performance assessment categories can be carried out through access rights as company leaders and HR department admins. Employees are restricted to entering assessment inputs, viewing monthly performance rankings, and accessing the results of evaluations.

A database scheme is adopted in information system through a class diagram including attributes, names, relationships, and connections. This provides a clear and better overview of the application scheme (Kusuma, 2023). The following is a description of employee performance assessment information system.

Figure 3: Class Diagram of Employee Performance Appraisal System

The class diagram is a form of the prototype structure of employee performance assessment system. Figure 3 shows that Employee class is connected to the assessment results as a control in employee performance assessment system. The integration is also connected to the assessment indicators, weights, and classes.

Activities related to the business processes are depicted in the form of data flow or control concepts, as well as structured actions using activity diagrams. These describe the design of data flow concepts, control, and structured actions in a system (Pasaribu et al., 2024). Activity diagrams are depicted in a structured manner following the work process of the flow shown by the use case. Each activity can be described with notations according to the function (Kadim et al., 2022). Figure 4 shows activity diagram modeling that explains the assessment input process.

Figure 4: Employee Assessment Input Process Activity Diagram

The flow begins when employee makes a selection for the monthly assessment and carries out the process for other employees by filling out the form determined by HRD. After completing the assessment, the assessor can save the results to be processed into a report.

The diagram in the business process design explains the interaction of each object in information system. A sequence diagram is used to understand the interaction of the system with the user. This diagram also explains the behavior and interaction between entities and systems (Priyatna et al., 2022). Figure 5 shows the sequence diagram for employee assessment process.

Figure 5: Employee Assessment Input Process Sequence Diagram

Figure 5 shows the interaction between the user and system in the assessment input diagram. The process includes accessing the menu and selecting the appropriate option to perform a monthly evaluation when a user wishes to input an assessment.

III. RESULTS AND DISCUSSION

The reliability of a business organization in the digital era is related to technology and the aspect of HR. Good HR management affects company performance (Kirana et al., 2023). This is the focus of PT. X, which adopts open employee assessments to maintain satisfaction and show creativity, intelligence, ethics, and integrity in consistently supporting the business objectives. The web-based employee performance assessment information system shows the application interface used for user interaction.

User Login Menu

Figure 6: Application Login Menu

Employees can enter the main menu of performance appraisal system. The username and password are generated by the admin and given to employees. The password is changed after a successful login to prevent others from accessing the personal data. Users with the admin role can successfully log into the system and perform employee management tasks, such as adding data through the 'Add Employee' form, as shown in Figure 7.

Figure 7: Add Employee Form

Figure 7 shows the interface used by HRD to fill in employee data. This form has features for managing employees and adding data, such as updating and deleting inactive employees. The result is a list of active employees assessed using a web-based assessment information system.

Employee performance assessment is conducted for each department. Currently, the company is classified as a medium-sized enterprise since the number of departments is small. However, a website-based performance evaluation method that considers specific tasks, responsibilities, and success indicators has become a leadership commitment. The role of leaders is crucial in implementing this new model in the transition from traditional patterns to digital transformation. Leaders also need to ensure that legacy employee management system can be applied in the new digital environment (Montero Guerra et al., 2023). Since performance is evaluated by department and division, the company admin must register each department in the organization through the following menu.

ID Divisi	Nama Departemen	Nama Divisi	Detail Divisi
1	Manajemen	Manajemen	Halaman Utama / Beranda / Manajemen
2	Manajemen	Manajemen	Halaman Utama / Beranda / Manajemen
3	Manajemen	Manajemen	Halaman Utama / Beranda / Manajemen
4	Manajemen	Manajemen	Halaman Utama / Beranda / Manajemen
5	Manajemen	Manajemen	Halaman Utama / Beranda / Manajemen
6	Manajemen	Manajemen	Halaman Utama / Beranda / Manajemen
7	Manajemen	Manajemen	Halaman Utama / Beranda / Manajemen
8	Manajemen	Manajemen	Halaman Utama / Beranda / Manajemen

Figure 8: Edit Page and Division Settings View

The display on the menu has a feature to create a list and edit the division or department. On this page, users can manage division and department settings, such as adding, editing, or deleting departments or employees. The monthly assessment menu is a feature used by direct superiors or designated parties to conduct routine evaluations based on indicators. The output of the process is in the form of (1)

Monthly Employee Ranking Report: containing information based on the points obtained at the end of each month, (2) Employee Warning Report: containing information on employees whose points are less than Minimum Completion Criteria (KKM), and (3) Employee Report with the Highest Points: containing information on employees who have the highest points in a particular month.

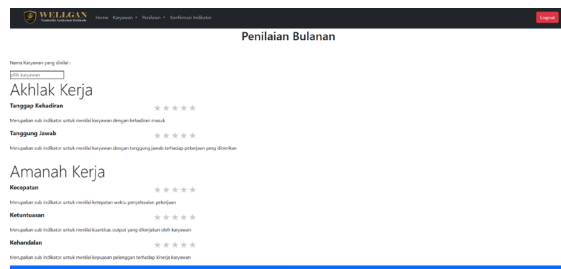


Figure 9: Monthly Assessment View Menu

The assessment of employee is carried out by leaders and colleagues in the same division. Figure 9 shows a list of indicators and sub-indicators in performance assessment process. In the implementation, assessors assign ratings in the form of stars to the sub-indicators of each indicator. Based on the interviews with application developers and company leaders, the main indicators are divided into (1) Work Ethics indicators, which include responsiveness to attendance and job responsibility, and (2) Work Trust Indicators, such as sub-indicators of work speed, completion, and reliability. The company has a policy related to salary categories based on the position, length of service, responsibilities, and competencies possessed by each employee.

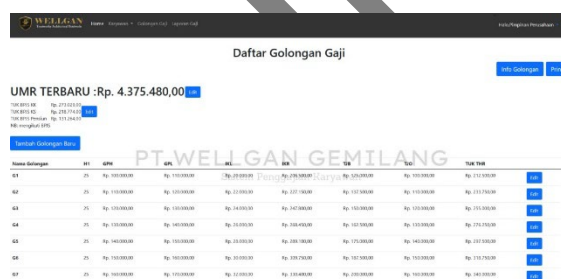


Figure 10: Edit Employee Salary Category Page

Figure 10 presents the salary category menu adjusted based on various factors, including the results of employee performance assessments. For example, employees with high results have the opportunity to be promoted to a higher salary group, and the results are also the basis for policy making to conduct salary

adjustments in accordance with work contributions. The application is also equipped with Employee Self-Service (ESS) feature, where assessment results are shown in a simple format for ease of understanding. In practice, users can view the monthly rankings through the list generated by the system.

Nama Karyawan	Total Point	Grade
Agus Kurniawan	100	A
Rudi Gunawan	80	C
Andi Nugroho	90	B

Figure 11: Recapitulation of Monthly Employee Assessment Rankings

Figure 11 is an example of the application interface display. The system shows a list of employees along with the assessment results. Employees can directly view assessment results, but the input, suggestions, or criticisms are provided manually by HR to prevent potential conflicts.

The system is equipped with a reporting feature to ensure transparency, accuracy, and management of employee achievement awards. The implementation of this page is in line with (Al Athmay et al., 2025), where leaders and employees can carry out HR activities independently to optimize operational processes.

No	Nama	Golongan	Gaji	Tunjangan	Total	Status
1	Agus Kurniawan	A	100.000.000	10.000.000	110.000.000	Active
2	Rudi Gunawan	C	80.000.000	8.000.000	88.000.000	Active
3	Andi Nugroho	B	90.000.000	9.000.000	99.000.000	Active
4	Agus Kurniawan	A	100.000.000	10.000.000	110.000.000	Active

Figure 12: Employee Salary Report Based on Employee Performance

Figure 12 shows the interface used by HR to print the overall employee salary report, which can be generated for a selected month and year. The results of the adjustments, including bonuses, have been added to the calculation of employee salary. This menu is also an input for HRD in determining improvements to salary increase process and considering the applicable budget and policies.

The following are some explanations of the results based on the system implementation to support the digital transformation of performance assessment management. Digital transformation is necessary internally to improve employee productivity. The implementation has led to increased productivity based on interviews with users since employees are motivated by the reward system.

The use of technology is the best solution adopted by PT. X. The assessment process includes several parties using employee performance applications. At PT. X, the process is carried out by the department leader and fellow employees from the party. This aims to avoid potential problems such as conflicts of interest, factors of likes and dislikes towards certain employees, as well as dissatisfaction and distrust.

The final phase was to conduct a trial run on users of the application. The trial was conducted using usability testing methods, and a total of 73 individuals were given a questionnaire. The Guttman scale was used, with answer options being yes or no. Table 2 shows the questions and the percentage of yes answers.

Table 2: Usability Testing Questionnaire Results

No	Statement	Percentage of Agree Answers
1	Is it easy for you to use this system?	90%
2	Is there any convenience when you interact with the system?	89%
3	Do you think the appearance of this system is good?	90%
4	Is the notification function working properly?	97%
5	Is the user password reset function in email working normally?	97%
6	Do you feel the system is capable of guaranteeing the security of your data?	100%

7	Is the information displayed on the system easy to understand?	90%
8	Is the role of this system very helpful, especially for performance appraisal process?	97%
9	Does performance appraisal process make things easier for you?	97%
10	Is the data management process running well and accurately?	97%
11	Is the information on the website complete?	93%
12	Is the app responsive?	97%
13	By using this system, does performance appraisal process become more objective?	97%
14	By using this system, does performance appraisal process become more transparent?	97%

The system was implemented at PT. X Surabaya based on questionnaires distributed to respondents. Many user responses agreed with the implementation and features provided by employee performance appraisal system.

IV. CONCLUSION

In conclusion, the design of employee performance assessment application aims to transform the digital process into a manual method. The application includes employee profile management, performance appraisal process, assessment indicator determination, result page, salary category, recapitulation, and report printing. The implementation of employee performance information system helps HRD, department leaders, company leaders, and employees to provide objective assessments. This system also assists HRD in managing data, such as adding, editing, and deleting data, understanding employee performance, and preventing subjectivity in the appraisal process.

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