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Performance Appraisal System for Services Companies Using PIECES Analysis Method

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Abstract:

In the world of work, employee performance has important importance. This is related to decisions that the company will take regarding awards, benefits, coaching or training, and even termination of employment. One of the implementations of the use of technology in a service company is to provide feedback on employees as a result of their work. This is also known as the performance appraisal process, which is a concern for many service companies. Some service companies have problems providing employee performance appraisals in a conventional way, such as filling out forms that have to be repeated due to filling errors, possible errors in calculating the final value of the performance appraisal, data access cannot be done in real-time by the applicable party, and storage and access of employee performance history is not well organized. Therefore, we need an employee production system that can help the employee performance process to be more efficient with accurate results. Researchers used the PIECES method as a method of analysis and the method of performance appraisal used was the 360-degree method. The development of this system uses the Scrum method so that the features that are built are more dynamic and can be changed to meet company needs. The performance appraisal system developed has succeeded in producing a list of employees in accordance with the rules used by the company, namely using the random employee method while maintaining the work intensity of the team.

Keywords —**systems, employees, performance appraisal, company, scrum.**
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I. INTRODUCTION

Human resources have a very vital role for a company[1], human resources are the resources used to mobilize and synergize other resources to achieve organizational goals[2]. In managing HR itself, there is the term Human Resource Management (HRM) which aims to support the activities of an organization or company to achieve predetermined goals. The function of HRM itself is for employee work, performance evaluation, compensation, training and development, employee relations, safety and health, and personal research [3].

Performance evaluation is a system used by management to evaluate individual performance to increase the achievement of short-term and long-term goals of the organization. Based on research results, performance appraisal has a positive effect on employee performance [4]. The purpose of performance appraisal is to ensure the achievement of targets, to know the current position of the company, and the level of achievement of company targets, especially to find out if there are delays or deviations so that they can be corrected immediately so that the goals or objectives are achieved. This is done within a certain period, providing feedback and fostering individuals so that each individual is expected to improve their performance and use their full potential in realizing organizational goals [5]. The results of individual performance evaluation can be used for several things such as improving performance, developing human resources, providing compensation, productivity improvement programs, and avoiding discrimination [6].

Every company, of course, wants employees who have the performance according to predetermined standards or even more. By conducting an effective, objective, open, and results-oriented employee performance appraisal, the company can optimize the competence of its employees. To achieve company goals, employees will be motivated to perform better from day to day [7]. On the other hand, when the employee performance appraisal is carried out ineffective, this will have many negative impacts on the company, starting from the

emergence of employee complaints, decreased employee motivation, to the high intensity of employee turnover [8].

The social context in which the performance appraisal is carried out is very important in determining the success of the assessment. Several social contexts of performance appraisal consist of issues related to the assessor (value provider), the value is given, the working relationship between employees, as well as several general factors such as organizational culture, environment, HR strategy, and organizational goals [9].

The performance appraisal system currently used is the 360-degree performance appraisal method. 360-degree performance appraisal is one of the most widely used performance appraisal techniques in organizations today because of several advantages, including assessments conducted from various points of view, reducing bias and prejudice, more feedback received, including from oneself [10]. This assessment system is carried out by assessing employees individually starting from self-performance appraisal, peer performance appraisal, subordinates to superior appraisal, and superior to subordinate appraisal. By applying the 360-degree performance appraisal method, the assessment will be more effective with more accurate results than traditional assessment methods[11].

The application of performance appraisal using the 360-degree method will have different weights from one company to another. In some companies, it will apply the same weight to each employee depending on the position and level of the grading employee [12]. In addition to looking at the position of the assessor, weighting can also be done by considering the position of the employee being assessed in the organization. In some organizations, apart from weighting by looking at the position of the assessor or the employee to be assessed, the organization also weighted the criteria variables such as personality, knowledge, and workplace [13].

Until now, the performance appraisal still uses the google form that is distributed to employees, in the employee appraisal there are still several problems such as the determination of less varied appraisal employees, the collection of assessment results that are not organized, the implementation of the assessment that exceeds the predetermined time, and the assessment history. Which is not organized so that it can be used by management for the benefit of the company.

Based on the problems previously mentioned, by utilizing technological advances [14], it is necessary to create a system that will help in generating a list of appraisals employees automatically, calculating the final value of employee performance appraisals in real-time, and storing an organized and easily accessible assessment history for management. to support decision making [13].

The development of this system uses the Scrum method so that the features that are built are more dynamic and can be changed to meet company needs[15]. By using the Scrum method, the researcher communicates a lot with the people and culture department so that the features built can be reported every sprint and get feedback quickly so that

improvements or changes are made if the features built are not as expected [16].

II. RESEARCH METHODS

This research uses the filed research method to take the research data source and perform data analysis with qualitative methods of all data collected. The research results are presented in the research report in the form of a descriptive method.

Data Collection Technique

The data collection techniques used in this study are as follows:

1. Observations are made by direct observation of the object under study where the process being observed is the process of determining the assessor and the assessment process at the people and culture department responsible for processing and until the final results of employee performance appraisals are obtained.
2. Interviews with 4 different levels in the company, includingemployee's staff who work as software quality assurance, software quality assurance lead, and staff from the people and culture department.
3. Documents obtained are employee performance appraisal forms, employee performance appraisal rules, and examples of calculating employee performance appraisals in the form of spreadsheets and office word documents.

Research Flow

In this research, there are several steps taken, namely determining the research source, collecting data, and conducting the needs analysis stage, as well as the development process using the scrum methodology. The following stages of the research are described in the research flow chart below:
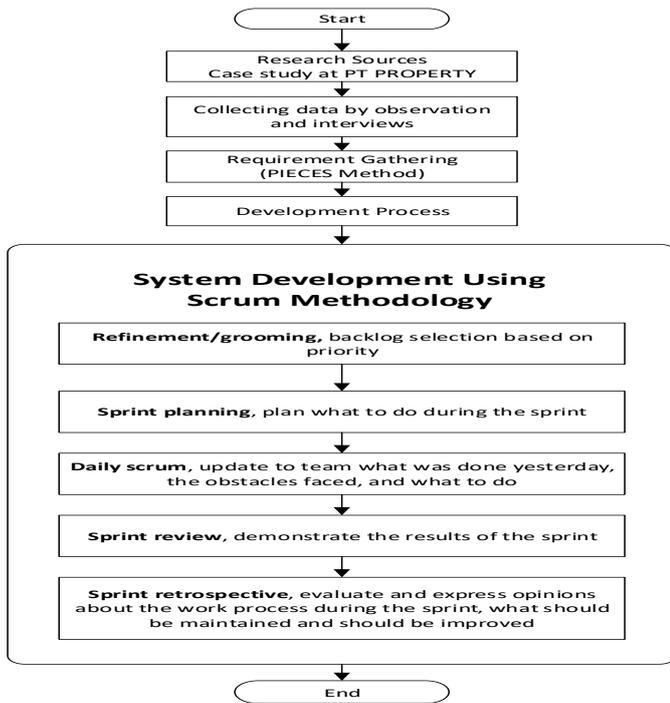
Fig. 1Research Stages

Fig. 1explains the research flow that begins by determining the source of the research. After determining the source of the research, the researcher communicates with the sources to determine the object of the research, which is followed by collecting data and information through observation, interviews, and viewing and analysing documents. To find out more about the object under study.

Based on the data and information that has been collected, a system requirements analysis was carried out using the PIECES method. The last stage in the research is to carry out system development, in this study, the system development method used is Scrum.

III. RESULTS AND DISCUSSION

Current System Business Process

The following are the basic provisions for performance appraisal taken from one Service Company as an example;
1. Performance Appraisal is conducted every 6 months or 2 times a year, namely:
   - Semester I (Period 1 January - 30 June)
   - Semester II (Period 1 July - 31 December)
2. The employee who is evaluated is the employee who is on the join date within the period of the period that will be assessed. If the join date is outside the assessment period, it will be included in the evaluation period in the next period.
3. Performance Appraisal consists of 4 assessment criteria:
   a. Self-Performance Appraisal
   b. Peers Performance Appraisal
   c. Subordinates to Superior Appraisal
   d. Superior to Subordinates Appraisal

4. Performance Appraisal consists of 2 types, namely:
   a. In Functional Structure (Total Value Performance) Grading of Performance may only give values from 0.00 - 5.00 with a maximum of 2 decimal digits.
   b. In Structure Tribe (Total Core Value) Value-giving can only give values from 0.0 - 5.0 with a maximum of 1 decimal point.
5. The components of performance assessment based on the functional structure consist of:
   a. Employee performance → related to job description and functional targets
   b. Employee Aspirations → relating to proposals, problems, or obstacles faced
   c. Core Values → behaviours that are related and not related to company values
6. The Assessment Score consists of 80% employee performance + 20% Core Values.
7. The performance assessment components based on the Tribe Structure consist of:
   a. Target Tribe → related to Tribe's business targets
   b. Employee performance
   c. Core Values
8. The Scores consist: 80% (70% tribe + 30% functional) + 20% Core Values.
9. 1 on 1session.
   Conducted before the supervisor fills in the Assessment Form for Subordinates. The goal is to provide feedback about things that are or are not in accordance with company expectations.

The stages of employee performance appraisal until obtaining the final result of employee performance (Total Performance Value + Core Value) are as follows:
1. Each employee will fill out the assessment form gradually (self, peers, subordinates to superior, and superior to subordinates).
2. Based on the assessment carried out in stage 1, then each employee's performance value is obtained, hereinafter referred to as the Total Performance Value with a weight of 80% of the superior's assessment (superior to subordinates performance appraisal) + 20% of the weight of self-assessment (self-performance appraisal).
3. Based on the assessment in stage 1, the respective core values are also obtained, hereinafter referred to as the Total Value, which is weighted according to the employee's job position. For details on the weight of the assessment can be seen in the following table:

Table 1. Weighted Final Score for Employee Performance Appraisal

Assessor	Head	Employees do not Have Superior	Employees with All Aspects	Employees do not Have subordinates
CEO	-	60%	-	-
Superior	75%		60%	75%
Peers	-	15%	15%	15%

Self	10%	10%	10%	10%
Subordinates	15%	15%	15%	-

Based on the weight rules in Table 1, the PIECES Analysis Method, the final score for the employee performance appraisal for the Total Value is as follows:

a. Total Value Head Value
    Employees who become Head will be assessed based on the value components from superior to subordinate, self, and subordinates.

b. Total Value of employees who do not have a superior
    Employees who do not have a direct supervisor will be directly assessed by the CEO who is considered the direct supervisor.

c. Total Value of all employees (self, peers, subordinates to superior, superior to subordinates)
    Employees who have all aspects of the assessment will get a core value assessment from all aspects of the appraiser according to the predetermined weight.

d. Total Value of employees who do not have subordinates (self, peers, superior to subordinate)
    Employees do not have subordinates, so they will not get the core value of their subordinates and the weight of the core value will be calculated based on the weight according to the established rules.

4. Total Performance Value + Total Core Value hereinafter referred to as the Final Value Performance Appraisal is to add up the Total Performance Value and Core Value:
    (Total Performance Score * 80%) + (Core Value * 20%)

The business process in the system runs for the determination of assessor and the employee performance appraisal process, the process flow can be seen briefly in the following figure:
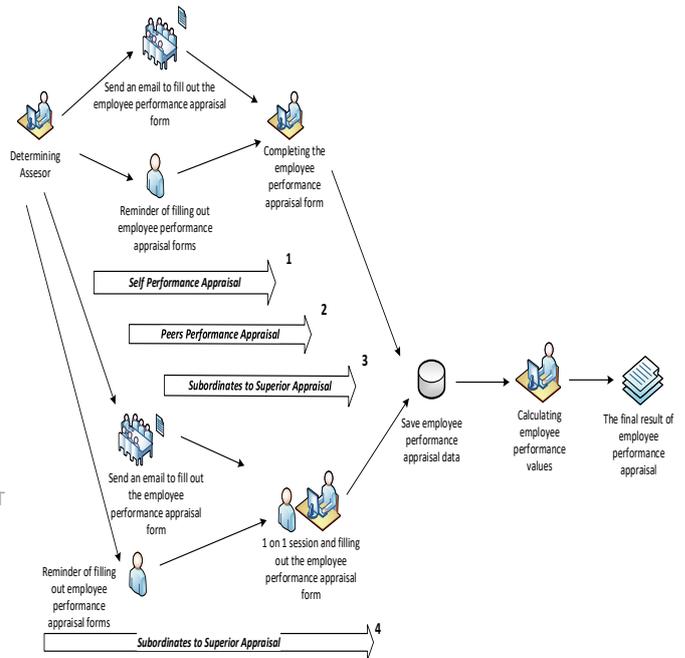

Fig. 2 Performance Appraisal Business Flow on the Current System

In the Fig. 2, it is explained about the running business process for determining the assessors and employee performance appraisals as follows:

1. The people and culture department will determine employee assessors for each employee.

2. The people and culture department sends an email to employees to immediately conduct an employee performance appraisal at a different time for each employee performance appraisal starting from the self-performance appraisal. If the self-performance appraisal performance appraisal period is over, it will be continued with the peer's performance appraisal, subordinate to superior appraisal, and finally superior to subordinates appraisal. All assessments were carried out sequentially.

3. Employees fill out the employee performance appraisal form at different times for each employee performance appraisal self-performance appraisal, peers performance appraisal, subordinate to superior appraisal, and superior to subordinates appraisal. Especially for superior to subordinate appraisal, a 1 on 1 session will be held before the supervisor fills out the assessment form.

4. If the employee has not filled in the appraisal form on the last day of the assessment period, the people and culture department will contact the employee to immediately complete the assessment form.

5. After the performance appraisal of each employee has been completed, the people and culture department will process the results of the assessment to obtain the final performance appraisal results for each employee.

Based on the explanation of the business process above, then an analysis is carried out to identify existing problems and

carry out a needs analysis of the system to be made. This is done using the PIECES method which can be seen in the following table;

Table 2. PIECES Analysis Method

Type of Analysis	Constraints	Solutions
Performance	It takes time to fill out employee performance forms because the people and culture department has to contact each employee personally to ensure that employees can fill out the work appraisal form according to the specified time.	Send notifications to employees so that employees immediately fill out the employee performance appraisal form during the time determined by the people and culture department
Information	Employee performance appraisal data cannot be accessed in real-time by all interested parties	Employee performance appraisal information is generated that can be accessed in real-time by interested parties
Economics	The output of the performance appraisal is one of the components to determine employee KPIs, the wrong output will cause the wrong giving of rewards or bonuses to employees	A more accurate calculation of the final value is made automatically in accordance with the provisions and formulas determined by the company
Control	The people and culture department is overwhelmed in determining appraisal employees as the number of employees increases	Automatic determination of appraisal employees is made automatically with a random method based on company rules
Efficiency	Recap data is not well organized so that superiors find it difficult to find data on self-performance appraisal, peers performance appraisal, and subordinates to superior appraisal when needed	A database is created that stores performance appraisal data in an organized manner for each employee
Services	During the 1 on 1 session between superiors and subordinates, the information and feedback obtained were not optimal	The remainder is made in the system in the form of notifications and sends email notifications automatically to superiors so that they immediately conduct 1 on 1 session and fill out the superior to subordinates appraisal form

System Planning
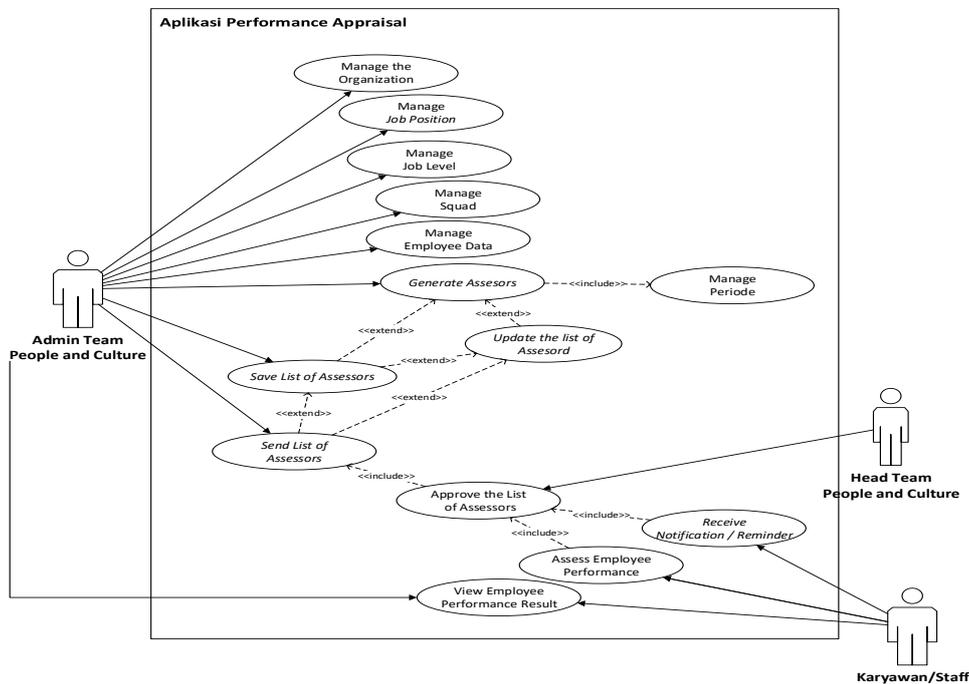
1. Use Case Diagram

Fig. 3 Use Case Diagram Performance Appraisal System

Use case diagrams for the design of a performance appraisal system have several actors involved, namely Admin (people and culture department), Head of People and Culture, and Employees. Each actor has a different task in the system. The following is an explanation of the duties of each actor:

a. Admin

Admin is a person who has full authority over the system. As an organization, the admin in this system is someone from the people and culture department. Use cases that can be done by admins are:

- Managing employee data including viewing, adding, updating, and deleting employee data
- Determining the appraiser employee, the people, and culture department will trigger the system to determine the appraiser employee and display it on a list of employees and employees who will assess. Then the people and culture department has the right to change the appraiser's data as long as the rules and formulas that have been determined by the company are still met
- Calculating the final value of employee performance appraisals, the people and culture department can trigger it so that employees can see the final results of employee performance appraisals for each employee
- See the results of the employee performance appraisal, the admin can see the overall employee performance appraisal output

b. Head People and Culture

The head of people and culture approves the list of appraisers sent by the admin.

c. Employees

Employees can perform the following use cases:

- Reminder / Notification of employee performance appraisal, employees receive notifications to assess employee performance
- Assessing employee performance, all employees can conduct employee performance appraisals for themselves. Then you can assess your colleagues, superiors, and subordinates if they are assigned to make related assessments
- See the results of employee performance appraisals, all employees can see the results of employee performance appraisals for the value of each employee
- If the employee is superior, then the employee can see the results of the employee's assessment as subordinates

2. Proposed System Business Process

The proposed business process to address problems that exist in the current employee performance appraisal system can be seen in the following figure:
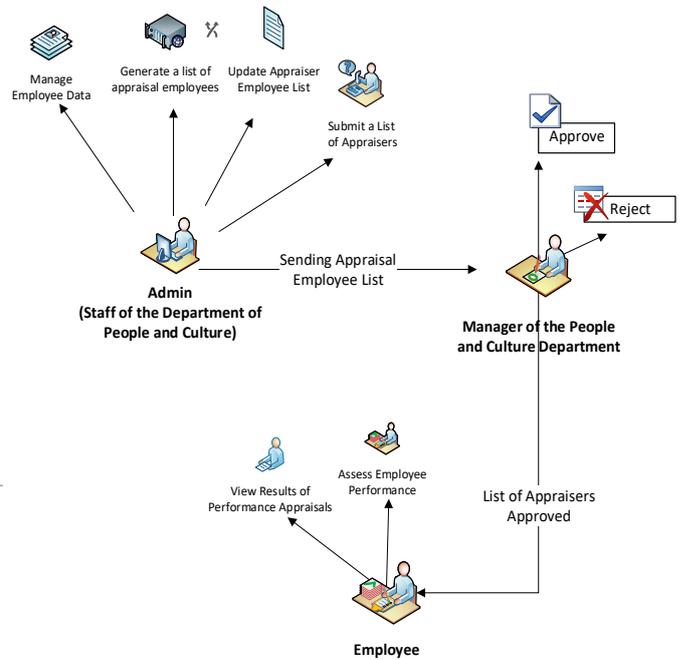

Fig. 4 System Business Process

In Fig. 4, the system business process is described as a form of solution to the problems previously described, a detailed explanation of the steps in the picture are as follows:

1) Admin manages employee data, employee data is the main determinant for automatic generation of employee appraisers list.
2) Admin generates appraisal employees during a certain assessment period. If the assessment period has not been determined, the admin can add the assessment period at the same time.
3) After generating appraisal employees, the admin can save a list of appraisal employees with or without changing the list of employees who have degenerated by the system. After generating appraisal employees or after changing the appraisal employee list, the admin can send a list of appraisers without keeping the appraiser employee list.
4) The manager of the people and culture department can approve or reject the list of appraisal employees that has been submitted by the admin.
5) After the manager of the people and culture department approves the list of appraisers, employees will receive a notification via the system and via email that the employee is assigned to conduct an employee performance appraisal.
6) Employees conduct employee performance appraisals

3. System User Interface Design

After analysing business processes and defining requirements, the next stage is system development. The proposed systems that have been successfully developed include the following:
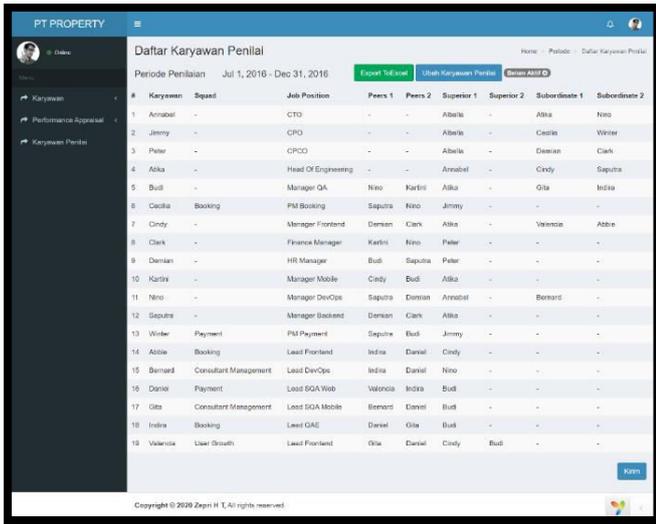
a. Generate Appraisal Employees

Fig. 5Generate Appraisal Employee

Fig. 5shows the user interface to generate appraisers. This page can only be accessed by the admin from the performance appraisal system. The appraiser employee generate can be accessed by selecting the "KaryawanPenilai" menu, then selecting the generate icon for the appraisal period if the period has been added previously. If the desired period is not in the period list, the admin can add the assessment period on the same page by pressing "TambahPeriode" button, then pressing the generate icon for the newly added period.

By pressing the generate icon, the system will display a list of appraisal employees generated based on the company rules that have been set. The list of appraisal employees that has been generated can be modified according to company considerations. After the employee list is generated, with or without changing the employee appraisal list, the data can be stored in advance or sent directly for approval by the leader of the people and culture department.
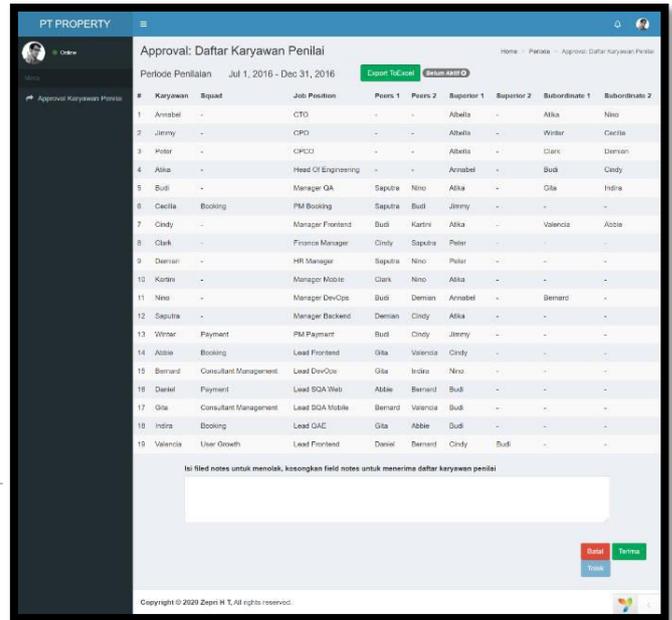
b. Approve List of Employee Appraisal

Fig. 6Approve List of Employee Appraisal

Fig. 6displays the appraiser's employee list approval user interface. This page can only be accessed by leaders of the people and culture department. On this page, the user can reject the appraiser's employee list by filling in the field notes to notify about errors or shortcomings in the determination of the appraiser's employee, then the user presses the "Tolak" button. The admin who is responsible for modifying the appraisal employee list will get a notification that the employee list is rejected, then the admin can make changes to the appraiser employee list.

To accept or approve the list of appraised employees, the leader of the people and culture department presses the "Terima" button without filling in the field notes, the system will send a notification to all registered employees via a notification on the system and send an email to each employee that the employee has been assigned to do conduct an employee performance appraisal.

When the appraiser's employee list has been sent by the admin to the approver, the admin cannot make changes to the appraiser's employee list as long as the appraiser does not reject the appraiser's employee list. If the approver approves the appraisal employee list, all employees who have been assigned as appraisers will receive a notification to the system and via email that the employee has been assigned as an appraisal employee.

c. Employee Performance Appraisal Form

Fig. 7 Employee Performance Appraisal Form

Fig. 7shows the user interface of the employee appraisal form. This page can be accessed by all employees to conduct an employee performance appraisal if the appraisal period has been activated by the admin and the date of accessing the form does not pass the end date of the assessment. To access this page, the user clicks on the "Performance Appraisal" menu, select the submenu "Menilai Kinerja", the system will display a list of assessment periods. Select the appraisal period to display a list of employees that must be assessed in that period, select one of the employees to be assessed on the hyperlink with the text "Nilai", the system will display an employee performance appraisal form.

After the user fills in all the fields on the form according to the rules specified by the form validation, click the "Simpan&Kirim" button on the bottom form. If successful, the assessment will be saved to the database and the incoming value will be processed by the system in real-time.

d. List of Employee Performance Results

Fig. 8 List of Employee Performance Results

Fig. 8displays a page that displays the results of the employee performance appraisal which will be displayed to the admin. The employee performance appraisal results page will display a list of all employees who have performed a performance appraisal in a certain period. Apart from admin, the employee's direct supervisor can also see the results of the performance appraisal of all members or direct subordinates of the employee. On this page, the user can use the search feature to find a particular employee who will be seen the results of the performance appraisal that has been carried out. The list of performance assessment results can also be downloaded in excel format by pressing the "Export to Excel" button. To see a specific employee value in detail, the user can press the detail view icon available in the right-hand column.

e. Detail of Employee Performance Appraisal Results (generate to pdf)

Fig. 9Detail of Employee Performance Appraisal Results (generate to pdf)

Fig. 9shows a detailed pdf file that can be downloaded by employees of performance value owners, direct supervisors,

and admins. In this pdf file, the user can see the results of the performance appraisal that has been carried out in one period. The information available is the appraisal period, employee information, self-assessment, assessment of each colleague, assessment of each superior, assessment of each subordinate, and the final score obtained by the employee concerned. This pdf file can be downloaded by pressing the "Generate to PDF" button on the detailed employee performance appraisal results page.

IV. CONCLUSION

Based on the results of the research up to testing the performance appraisal system, the following conclusions can be obtained:

1. The performance appraisal system has succeeded in generating a random list of appraisal employees based on the rules used by the company.
2. The performance appraisal system has succeeded in determining the final score for employee performance appraisals with the same output as the manual calculation based on the rules set by the company.
3. With the performance appraisal system, direct supervisors and the people and culture department who act as admin can access real-time employee performance values and can access this data at any time for company needs in helping decision making in the future.
4. This performance appraisal system is in accordance with the current needs of the company and can be used in all company branches because the employee performance appraisal is carried out at the same time or simultaneously.

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