

Integrated Performance Appraisal System with Management by Objective Method

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Abstract— Higher education institutions generally have two types of employees, Lecturers and Non-Lecturers, both of which are managed by the Directorate of Human Resources (HR). One of the tasks of the HR Directorate is to provide Non-Lecturer employee performance appraisal services. Scoring systems that are often used are generally behavior-based (Behaviorally Anchored Rating Scales techniques). This technique assesses all employees with the same assessment indicators. This raises the problem of not being able to show actual work results because it only evaluates behavior without assessing the successful completion of the employee's main work or tasks. Based on these problems a performance appraisal-based performance target system (Management By Objective) was developed. This system can provide assessment results that reflect the actual performance of employees and can set assessment indicators based on the duties of each employee. Evaluations show that the system is function properly and successfully helps the implementation of performance appraisal system development because it is able to facilitate the evaluation of subordinates' performance, evaluate their own performance, be able to help provide assessment results that reflect actual employee performance, and be able to help regulate assessment indicators based on the duties and responsibilities of each employee.

Keywords— *performance appraisal system, non – lecturer employee, management by objective*

I. INTRODUCTION

In an organization it is very important to be able to maintain existence and be able to continue to develop its potential. This is inseparable from the role of competent human resources in their fields. Based on this, a performance appraisal system is very necessary to support the improvement of the quality of human resources [1].

Various employee performance appraisal techniques have been developed and applied in various institutions. Generally, every institution will avoid the element of subjectivity in evaluating the performance of its employees. For example, an institution engaged in finance uses employee performance appraisal techniques by incorporating different assessment components for each group, judged to be less effective because of the high subjectivity element [2]. The Industrial Engineering Department of a tire factory located in Tangerang applies the Balanced Score Card method to establish clear Key Performance Indicators items for each of its employees. The method is expected to eliminate the subjectivity of the assessment that comes from the person who leads the department [3].

A higher education institution has two types of employees, lecturers and non-lecturers. The performance evaluation of lecturers has been regulated in various laws and regulations regarding higher education in Indonesia [4].

While the performance evaluation of non-lecturer employees for private universities is carried out with the regulations of each institution. This research was applied at a private university that previously assessed the performance of non-lecturer employees based on behavior using the Behaviourally Anchored Rating Scales (BARS) technique. The BARS technique evaluates employees based on their behavior with the same indicators for all employees. This creates a problem because it cannot show the actual work. This is because if an employee is assessed to be well behaved then the result of the employee's performance appraisal is good and if the employee is assessed to have bad behavior then the result of his performance appraisal is bad. Even though employees with bad behavior do not necessarily have bad work results and vice versa. To overcome these problems, a new integrated assessment system was developed by adopting Management by Objective (MBO) techniques based on work targets [5]. This method has been widely used in various fields and has been assessed several times [6-8].

MBO is a technique of performance appraisal based on the success of each member of the team in completing their work targets [5, 9-11]. So, MBO provides a unique assessment for each employee. While BARS technique focuses on evaluating employee's behavior with the same indicators for all employees. Reference [12] states that the MBO technique is an effective tool to improve employee performance in order to encourage organizational productivity. Meanwhile, [13] states that MBO improves employee performance so that organizations can compete in the world of globalization. However, many researchers try to combine both techniques to get the most effective performance appraisal [9-11].

The performance appraisal system that was developed can manage the assessment indicators based on the works and responsibilities of each employee in each unit. Unit leaders will set a rating scale not only based on employee work behavior but also the standard of achievement that must be achieved by each employee. This standard will be a reference for leaders to be able to carry out an evaluation. The system is built integrated with various existing systems so as to facilitate the unification of data.

II. METHODS

This research can be classified as applied research because the developed system can be used as a practical solution to a problem. The object of this research is a private university in East Java. The study was developed using the prototyping methodology as seen in Fig 1. It starts with a system analysis to understand the current employee performance appraisal system with various existing problems and defines the system requirements. System analysis is carried out through semi-structured interviews with related

parties, evaluating the current employee performance appraisal system and looking at related documents. Interviews were conducted with the Director of Human Resources (HR), the Manager of Empowerment of Human Resources (PSDM), and the Manager of Management Information Systems (MIS).

The next step is to create a system design based on a predefined needs analysis. The design created includes data design, process design, and user interface design. Data design is based on the analysis of the relationship between data so that it can be well integrated in the system. The design process shows the workflow of the new employee performance appraisal system and the roles of the parties involved. While the user interface design shows the appearance of the system when used by the user.

The design of the data is confirmed with the SIM director to ensure that employee performance appraisal data can be integrated with other data. While the user interface design will be used to develop a prototype system. The design process and prototype were discussed with the HR director to ensure that changes were made to the new system and to test the ease of use. The results of discussions with the HR director are used to improve the existing design. The approved design will be implemented in the form of a web-based program. The program is designed web-based so it can be accessed directly by many users from various departments in the institution. Data implementation is done using Postgre SQL software. While the program implementation is done using the PHP programming language: Hypertext Preprocessor based on the PHP framework template developed by the SIM Directorate.

As a final step, a program testing was conducted which included the verification and validation stages. Verification is carried out to ensure that the program runs according to the design previously made and validation is carried out to ensure that the program output is in line with user requirements. Verification is done using the black box testing method, by testing various input scenarios then evaluating the results. If the results are not suitable, repairs and re-verification will be carried out. Validation is done by demonstrating the program, simulating by the user, and evaluating the program by the user. Evaluation is done by filling out the questionnaire and giving a brief explanation related to the answers to the questionnaire. The simulation was conducted by three HR employees as administrators who were responsible for carrying out employee performance appraisal at the university which was the object of research, 9 employees who had positions as unit leaders who gave assignments and assessed the performance of subordinates, and 19 employees as subordinates to be assessed as well as assessing themselves and evaluating coworkers. Respondents who act as administrators are selected from the HR directorate given their duties as the ones responsible for carrying out employee performance appraisals. While other respondents were selected using the cluster sampling method combined with the simple random sampling method. The existing cluster is divided into 2, namely academic support units and academic units. Respondents from each cluster were taken randomly using the simple random sampling method. The results of the questionnaire and interview will be used to improve the program.

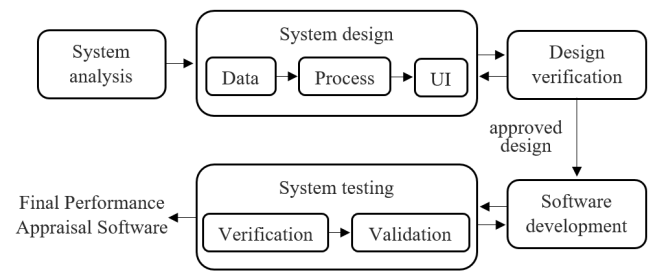


Fig. 1. Research methodology

III. RESULT AND DISCUSSIONS

Employee performance appraisal techniques currently used are Behaviourally Anchored Rating Scales (BARS). The assessment carried out only assesses the achievement of agreed targets and applies equally to all employees. The target set is a general target, employee behavior in serving customers is not the result of performance. So the results of the assessment do not indicate the ability of employees to complete their work in accordance with their respective duties and responsibilities. To overcome the existing problems, this research develops an employee performance appraisal software based on the work targets that have been set for each employee. The performance appraisal technique used is Management by Objective.

The system that is built begins with an analysis of the old system to find out the current conditions and the problems they are experiencing. Based on the results of the analysis, it was found that the obstacle that had occurred with the existing performance appraisal system was that the results of the assessment could not show the actual work results because what was assessed was only behavior without assessing the work so that it did not reflect the ability of employees to carry out their work in accordance with their duties and responsibilities. each employee. Based on the results of this analysis, a system design is made which includes the design of data, processes, and user interfaces.

Data is an important part of a system. In the system built, the data is described in the form of an Entity Relationship Diagram (ERD) [14]. This ERD will describe the relationship between the entities involved in the Integrated Performance Appraisal System with the Management by Objective Method. Part of ERD can be seen in Fig. 2.

Broadly speaking, the design of the workflow process of the performance appraisal system developed in this study is divided into five stages of assessment. The process design of each stage of the employee performance appraisal system is described using the Business Process Model and Notation (BPMN) [15]. The first stage, which is the preparation phase involves the Directorate of Human Resources and unit leaders to set work targets, periods, coordinator of work units, types of appraisers, indicators and weighting of assessments for each type of appraiser, as well as limits on Cumulative Increase in Position. The work target for each employee is determined by the respective unit leader for each assessment period. While the evaluation period, type of appraiser and access rights respectively, coordinator of the work unit, indicators and weight of the appraisal for each type of appraiser, as well as the cumulative number limit for obtaining a promotion (AKKJ) are determined by the Directorate of Human Resources. BPMN from the system setting stage can be seen in Fig. 3.

The second stage begins after the selected unit coordinator receives notification of the assessment schedule. At this stage a prospective employee appraiser is determined for each type of appraiser. BPMN from the second stage, namely the determination of prospective assessors can be seen in Fig. 4. Next, the third stage is the assessment stage. At this stage the leaders and employees will receive notifications to make an assessment. Employees will receive notifications to assess their own performance as well as to assess colleagues that have been determined by the unit coordinator. While the unit leader assesses all employees in the unit they lead. BPMN from the third stage, namely the assessment can be seen in Fig. 5. The fourth stage is the stage of calculating the value of performance and forming a report. This stage is carried out entirely by the system by taking assessment data that has been done by all types of assessors. The result of the forth stage is the report on the performance appraisal (report cards). The last stage is validation of report cards by the HR Directorate.

BPMN from the validation stage can be seen in Fig. 6. Validated report cards can then be seen by interested parties. The flow of the employee performance appraisal process can be seen in Fig. 7.

The User interface design is implemented in the form of a web-based Performance Appraisal software. This software provides various features which are divided into five major parts, i.e. data management, assessment processes, monitoring, validation, and reports. The monitoring feature is used to check the assessment process. The validation feature is used to check the completeness of the assessment results. If all assessment results are complete, validation can be carried out on the results of the assessment and close the assessment process. Employee Performance Assessment users are divided into five types, i.e. administrators, coordinators, appraisal employees, unit leaders, and assessed employees. Each user has different access rights to the features in the system, for example features that can be accessed by the administrator can be seen in Fig. 8. Fig. 8 shows that the administrator has the right to manage data through the Settings menu, monitor the course of the assessment process through the Monitoring menu, and at the end the assessment period validates the assessment results through the Validation menu. Administrators can also view reports in the form of performance report cards from each employee through the Report Card menu.

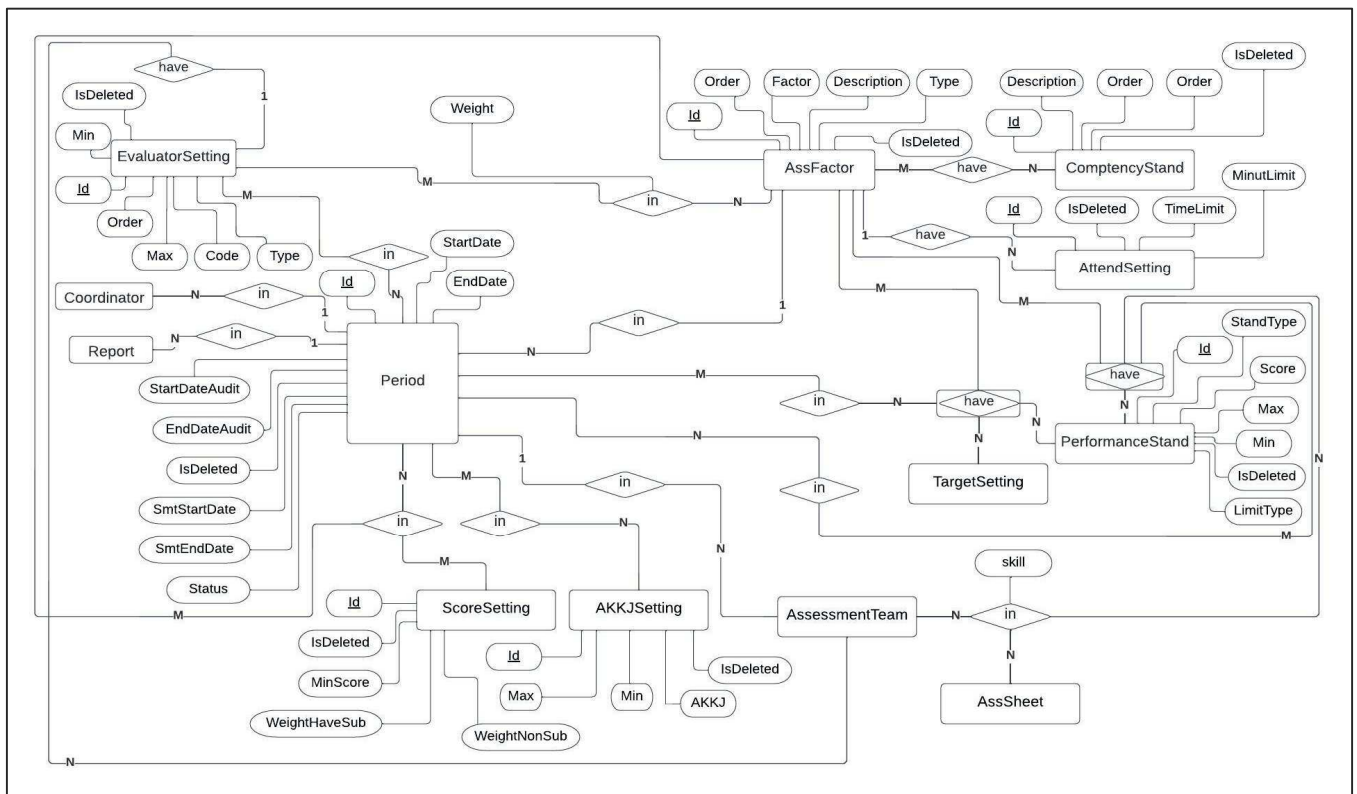


Fig. 2. ERD of Integrated Performance Appraisal System

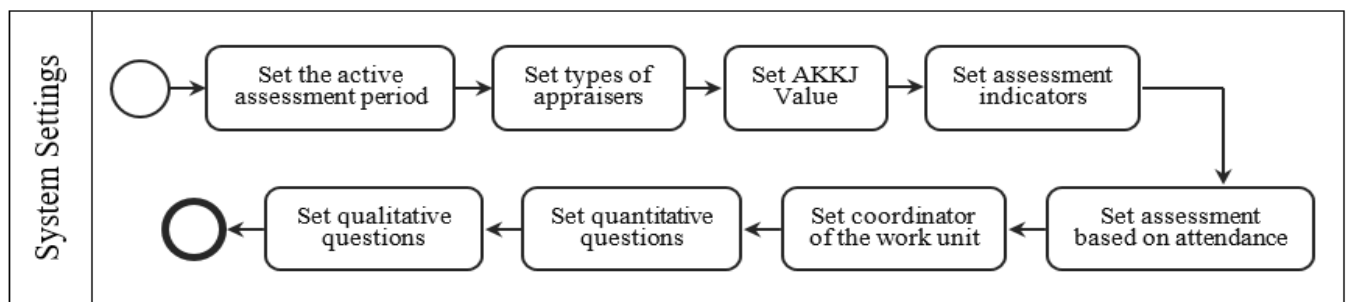


Fig. 3. BPMN of the first stage (system setting)

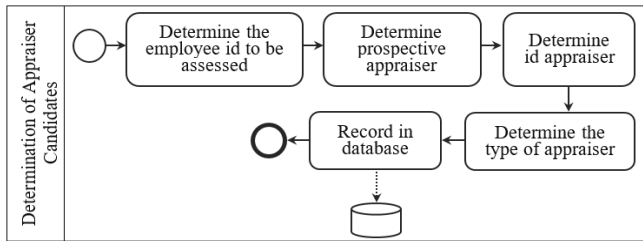


Fig. 4. BPMN of the second stage (determination of appraiser candidates)

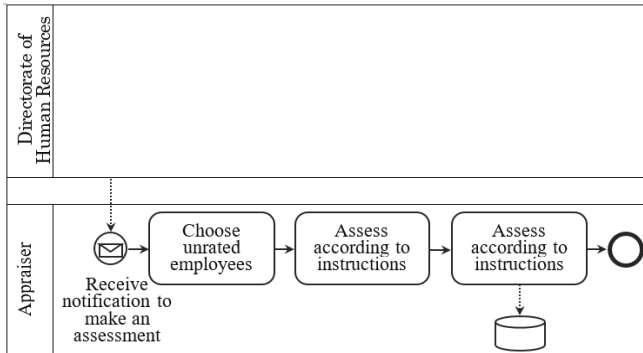


Fig. 5. BPMN of the third stage (assessment stage)

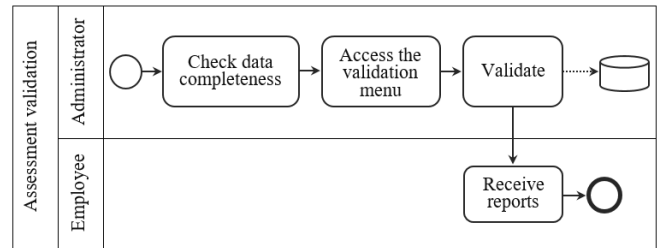


Fig. 6. BPMN of the fifth stage (validation stage)

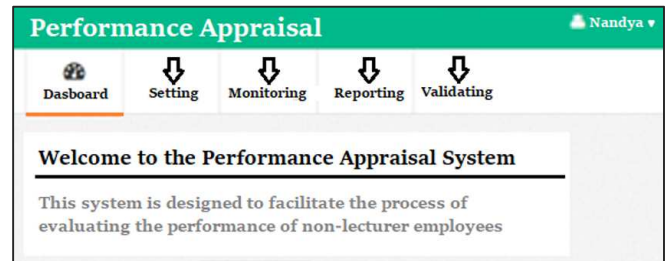


Fig. 8. Administrator main menu

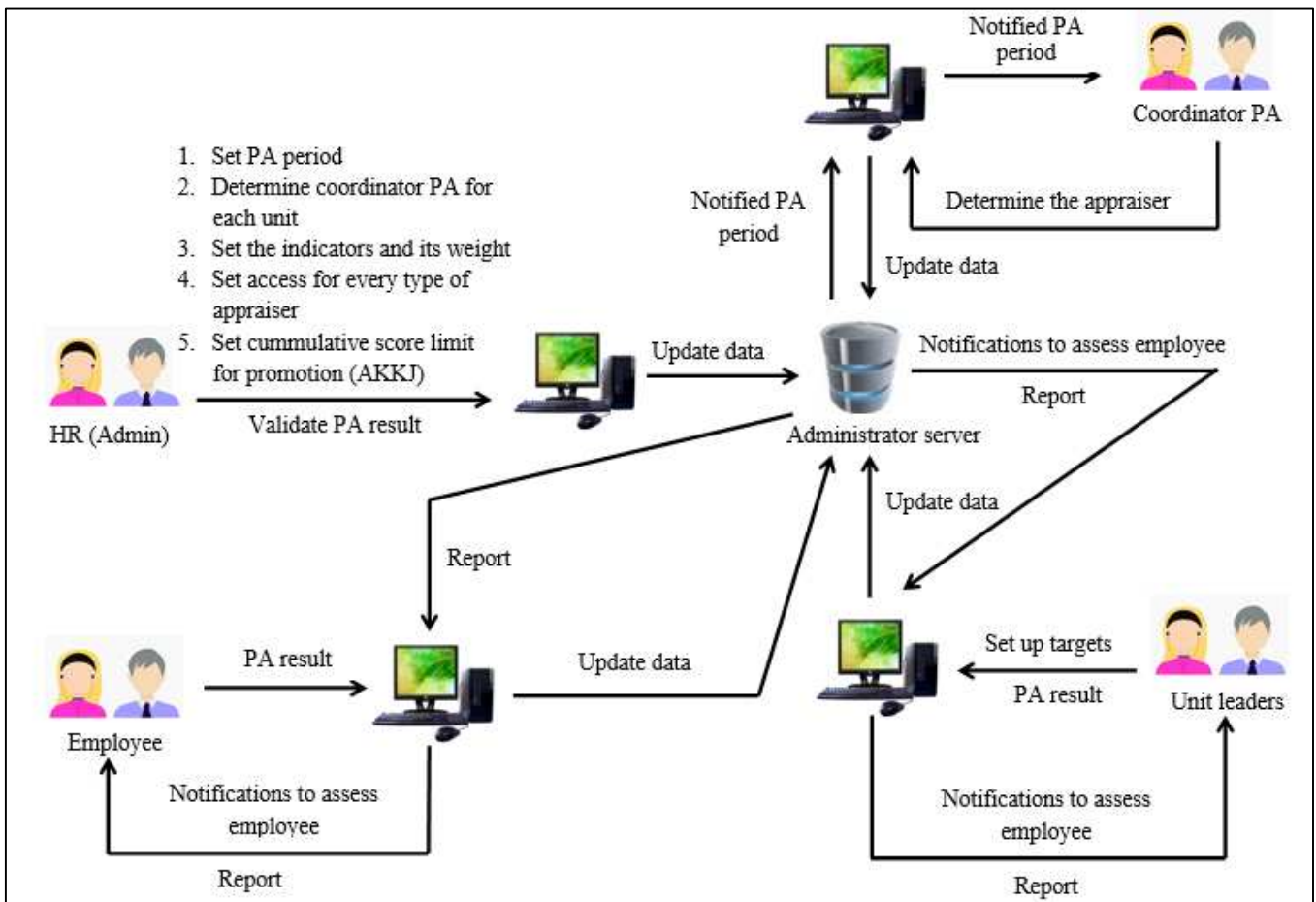


Fig. 7. Appraisal system process

The appraiser can provide the results of the appraisal on a predetermined schedule period in accordance with the given role (as oneself, supervisor, coworkers, subordinates, or customers). Examples of assessment pages can be seen in Fig. 9. Fig. 9 shows that there are two types of assessment factors,

i.e. quantitative and qualitative factors. Qualitative factor assessments are displayed in the form of multiple choices in which the assessor can choose more than one answer choice. Each assessment factor can be divided into several sub-assessment factors. The factors assessed are adjusted to the work targets that have been determined by the unit leader.

Employee Report

Employee Name : Mia Miranda

NPK : 212121

Assessment Period : 28 May 2017 - 08 June 2017

Print Recap

Here are the results of your assessment:

NO	COMPETENCY	SCORE
QUANTITATIVE RESULT		
1	The percentage of students who complain about the services provided	3.00
SOFT COMPETENCE		
1	Ubaya : Capability	3.00
2	Lis Volat Propiis : Passion to build organizational capabilities independently, grow and develop through a continuous learning process	1.75
3	Pacta Surf Servada : Upholding the principle of fulfilling promises, what has been promised must be kept	1.90
4	Co-operation : Develop attitudes and behaviors that have a commitment to always want to move forward in an atmosphere of professional cooperation	0.65
5	Caring Community : Having concern for others in daily life regardless of social status and nationality	0.75
6	Learning organization : Continuously learning to be able to respond to the dynamics of change	1.35
MANAGERIAL COMPETENCE		
1	Managerial Capability	1.95
2	Coaching Capability	2.50

Attendance Competency Results

Soft Competency Results

Competency Results Quantitative Result

Managerial Competence Results

10 % = 0.5

30 % = 2.82

60 % = 1.8

0 % = 0

Total Score = 5.12

AKJ = 28

AKKJ lalu = 0

AKKJ = 28

Fig. 9. Performance appraisal form

After the assessment period ends and the administrator has validated, the system will automatically carry out a calculation process to produce report cards from each employee. An example of an employee's report card can be seen in Fig. 10. Employee performance report cards contain detailed assessment results and a summary of final grades. The assessment results are calculated from all types of assessors and the weights of each assessment factor. If needed, report cards can be printed.

Testing was carried out to ensure that the program created was suitable to use. There were two kinds of tests carried out, namely verification and validation. Verification was carried out in the form of functional testing using the black box testing method. After several tests and revisions have been made, the program can be ascertained that it was running according to the design made.

Validation began with demonstrating the available features and how to use the program. After that, it was

continued by asking the user to do a simulation accompanied by the researcher. Finally, the users were asked to provide feedback on the program that was created as a solution to the problems that were previously encountered. The results of the evaluation by administrators can be seen in Table 1, the results of the evaluation by unit leaders can be seen in Table 2, and the results of the evaluation by subordinates can be seen in Table 3.

Based on the results of the questionnaire for administrators, it can be seen that 100% of respondents agree that the developed system helped the actual employee performance appraisal process with easy settings and operations and also provided reports as needed. On the other hand, there were some suggestions from respondent, namely adding an import feature (from Excel file) to make the process of adding large amounts of question data easier, feature to conduct assessment after deadline, and assessment complaint feature.

Job Appraisal Sheet

(This assessment is CONFIDENTIAL)

Assessment Period : 28 May 2017-08 June 2017

Assessment Date : 16 June 2017

Assessor Name/(NPK/ID) : Yusuf Setiawan / 444444

Assessor Status : Leader

Assessee : Mia Miranda / 212121

Rate according to the question asked

NO	ASSESSMENT FACTOR	SCORE
QUANTITATIVE RESULT		
1	The percentage of students who complain about the services provided	10

Please choose according to the competence of the employee you assessed. If none match, leave it blank.
You can also select more than one appropriate statement

SOFT COMPETENCE

1 : Ability

- ☒ Able to control oneself in the sense of not complaining when facing pressure
- ☒ Able to work diligently and thoroughly
- ☒ Able to be part of the solution to any problems that arise in the work environment
- ☐ Able to do more than targeted

Fig. 10. Report card

TABLE I. The results of the evaluation by administrators

Questions	1	2	3	4	5
The developed system helps provide assessment results that reflect the actual performance of employees	67 %	33 %			
The developed system helps to set assessment indicators based on the jobs and responsibilities of each employee	100 %				
The developed system makes it easier to share access rights	67 %	33 %			
The software features provided for administrators are easy to understand		100 %			
It is easy to operate the Performance Appraisal software	67 %	33 %			
The reports provided are as needed	33 %	67 %			

1 = strongly agree, 5 = strongly disagree

Table II shows that 100% of respondents agree that the developed system facilitates the process of evaluating the performance of subordinates and the reports provided are in accordance with the needs. All respondents agreed that the features provided were easy to understand, but only 78% agree that the Performance Appraisal software was easy to operate. Confirmation results with 22% of respondents who were doubtful about the ease of using PA software,

respondents stated that the assessment by choosing the appropriate statement was quite difficult to do when compared to giving a rating like the previous system. This was because the time required to read each statement was quite a lot. But on the other hand, respondents stated that the assessment by choosing the appropriate statement was able to provide more accurate assessment results.

TABLE II. The results of the evaluation by unit leaders

Questions	1	2	3	4	5
The system developed makes it easier to evaluate the performance of subordinates	56 %	44 %			
The software features provided for unit leaders are easy to understand	44 %	56 %			
It is easy to operate the Performance Appraisal software	56 %	22 %	22 %		
The reports provided are as needed	33 %	67 %			

1 = strongly agree, 5 = strongly disagree

At least 84% of respondents as subordinates stated that the developed system helped employees performance appraisal process with easy operations and provided reports as needed. The reason for 15.8% of respondents who were doubtful about the ease of using PA software was the same as that of 22% of respondents as unit leaders who were doubtful about the same question.

TABLE III. The results of the evaluation by subordinates

Questions	1	2	3	4	5
The system developed makes it easier to evaluate your own performance	21%	79%			
The software features provided for employee as subordinates are easy to understand	42%	58%			
It is easy to operate the Performance Appraisal software	31.6 %	52.6 %	15.8 %		
The reports provided are as needed	5%	95%			

1 = strongly agree, 5 = strongly disagree

Based on the test results, it can be concluded that the employee performance appraisal system developed is feasible to use. In the future, the system will be developed by adding features suggested by respondents.

IV. CONCLUSION

After being tested, it is proven that the system developed can provide assessment results that reflect the actual performance of employees by arranging assessment indicators based on the duties and responsibilities of each employee. The system also simplifies the process of evaluating performance for oneself and subordinates. So as a whole the system developed makes it easier to carry out performance appraisals in accordance with the characteristics of the duties of each employee. In the framework of system development, respondents provide suggestions to add complaints to the results of the assessment.

Ease of customizing the program without depending on the programmer is very important. Therefore, a configurable performance appraisal system will be our future research.

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