

A Prototyping Model for Self-Appraisal Employee Performance Application Development in Cooperative

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Submitted : Aug 9, 2023 | **Accepted** : Aug 11, 2023 | **Published** : Oct 1, 2023

Abstract: Employee performance appraisal which is currently still being implemented cannot yet describe transparency. In addition, the process is still manual, which is far from effective. This study aims to develop a web-based employee performance appraisal application system that can increase the transparency of assessments in microfinance cooperatives. The focus is on using self-appraisal techniques to promote transparency in the appraisal process. Transparent assessments are critical to building trust and fairness during performance evaluations. Using the self-appraisal method, individuals can evaluate their own performance, skills, and achievements in a transparent and unbiased manner. This study investigates the process of making an employee performance appraisal system with the prototyping model method as a development method. The findings of this study contribute to existing knowledge about performance evaluation in microfinance services, particularly in relation to self-appraisal techniques, and offer practical insights for organizations wishing to increase the transparency of appraisals through web-based application systems.

Keywords: Self Appraisal, Performance Appraisal, Prototyping Model, Yii Framework, Web Application

INTRODUCTION

The rapid development of information technology is the biggest driving force for the progress of a company. But unfortunately, the traditional concept of Human Resources that is still adopted makes it difficult for innovation in Human Resources itself (Huichun, 2018). The productivity of a company is directly related to employee performance. Measurement of employee performance is assessed by the performance that has been carried out. A clear employee performance appraisal system with performance targets that employees need to achieve. A clear system can make employees more productive in giving their best performance with reciprocity from the company to provide promotions and incentives (Sharma & Hosein, 2020).

The Indonesian economy has three sectors of strength to carry out activities in the order of economic life, namely the state sector, the private sector, and the cooperative sector. One alternative that can be pursued is through a cooperative forum and involves a system of cooperation with various national business actors. Cooperatives are one of the economic actors that are populist in nature, so cooperatives are considered suitable for the Indonesian economy. Cooperatives are directed to develop as healthy business entities as well as drivers of the people's economy.

The current employee appraisal process in many cooperatives in Indonesia only uses a form in the form of an excel document distributed by the branch head to his employees in each branch. This certainly makes there is no integration between performance appraisal with various aspects in it with the impact

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of the goal for the organization. So that this existing performance appraisal system is deemed unable to answer how to measure the performance of each employee and how it impacts the organization.

There are several methods of conducting performance appraisal assessments. Employee performance appraisal involves systematic measurement methods and one of the most popular is self-appraisal. This method requires employees to self-report their assessment of performance to the top communication leader in an organization (Meng & Berger, 2019).

This research aims to design and develop an employee performance appraisal system application that can overcome existing problems. With an integrated application system, it is expected that the organization can produce a more accurate and comprehensive employee performance evaluation.

LITERATURE REVIEW

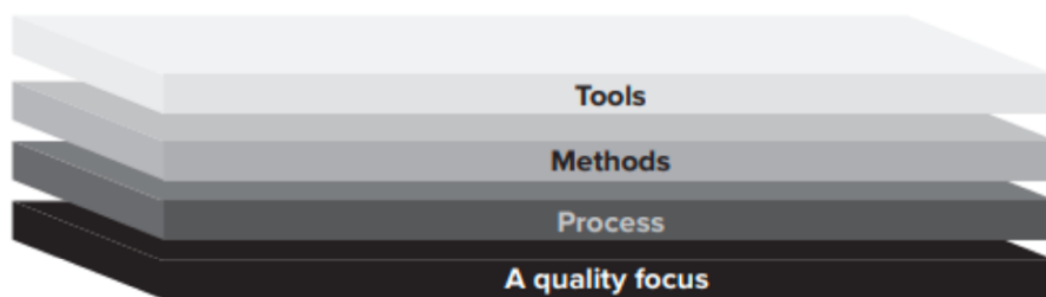
Employee Performance Appraisal

Each company or organization has different rules for improving employee excellence with the aim of improving employee capabilities and company progress (Sharma & Hosein, 2020). Performance appraisal for employees serves as feedback on various things such as abilities, fatigue, shortcomings, and potential in each individual employee. So that later it can be useful for determining future goals, paths, plans, and career development in the company. As for the company, performance appraisal is important because it can be a decision maker for the purpose of developing its employees (Lesmana, 2020).

The performance appraisal system is a system for assessing employee performance results using a predetermined indicator, so that companies can find out the quality and quantity of employees regarding how productive employees do their work both now and in the future. This assessment system has the intention or purpose of objectively assessing employee work performance over a certain period in the past, the results of which are good for the organization, such as for the purposes of employee transfers, as well as for the development of the employees concerned themselves (Ghozali et al., 2019).

Software Engineering

Software engineering layer is a concept that reflects the separation of various stages in the software development process into different layers. This concept helps to organize and understand the important



stages in the software development life cycle (Pressman & Maxim, 2010).

Fig. 1 Layers in Software Engineering (Pressman & Maxim, 2010).

In the process of developing an employee performance appraisal application system, the prototyping model is part of the layer methods because it is one of the methods used in software and is part of the development strategy in managing software engineering projects because it is in accordance with existing requirements.

Web Application

Web applications are applications that can be accessed through a web browser using the internet network as a transmission medium. Web applications can be used for a variety of different purposes

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according to the desired needs. System design must be tailored to the needs and problems that exist. In the performance appraisal system, it is necessary to prepare the design effectively if it will be built using a web-based application system (Zega et al., 2018).

In addition, one of the advantages of web applications is the speed of the application which is very light so that it can be accessed quickly. The performance of the application website is a very important parameter in the convenience of users if they want to access easily with the services provided (Jahromi et al., 2020).

METHOD

Self-Appraisal

One of the techniques that companies use in performance appraisal is Self-appraisal. The self-appraisal technique is conducted with participants self-reporting their assessment of the performance of the top communication leaders in the organization (Meng & Berger, 2019).

Self-appraisal is a type of performance appraisal carried out by employees in assessing their own performance and abilities. Self-appraisal is done so that employees can recognize their own strengths and weaknesses so that they can identify aspects of work behavior that need to be improved in the future. In practice, the company or provider expresses the desired employee expectations, business objectives, and assessment criteria that must be met by the employee.

Prototyping Model

Prototyping model is a system development technique that uses prototypes to describe the system so that users have a clear picture of the system to be built by the developer team. Prototyping model will be easier because it helps to form a software design model that will be created to produce the desired application system.

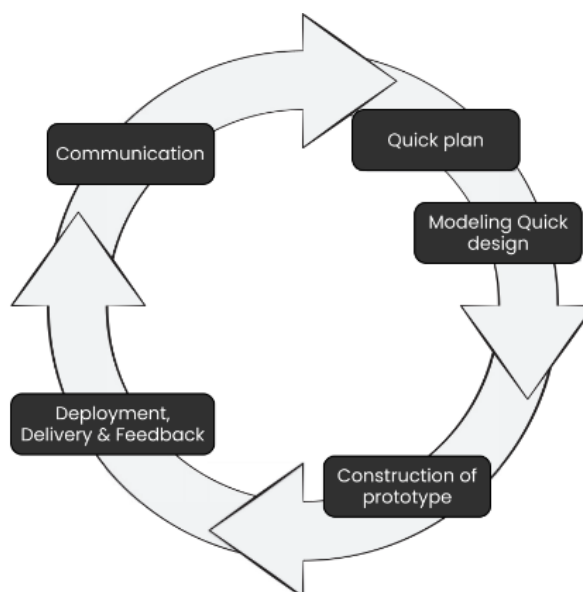


Fig. 3 Phase on Prototyping Model

In addition, this method can harmonize between the development team and stakeholders so that communication is easier according to its purpose. This goal is needed to identify the functions and features needed in the system to be created (Pressman & Maxim, 2010).

The prototyping model is one approach in software engineering to demonstrate in the form of a prototype design along with its components before the development construction will be carried out directly. So, this method can be used as a differentiator between exploration and demonstration functions (Siswidiyanto et al., 2020).

RESULT

Communication

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The Communication phase of the prototyping model for creating an employee performance appraisal system is a very important stage in the development cycle, which emphasizes effective communication with stakeholders. During this phase, intensive collaboration takes place to thoroughly understand the users' needs and expectations of the performance appraisal system to be developed.

This interview was conducted with two employees, namely the head of the HR division and operational employees using the semi-structured interview method. Semi-structured interview is a method using some predetermined questions but there is room for further exploration of topics outside of the questions (Adeoye-Olatunde & Olenik, 2021).

Based on interviews conducted with representatives of the KUM Syariah Cooperative, most employees are quite familiar with the use of technology and computers to help increase efficiency in employee performance appraisal.

Some of the problems or obstacles experienced with the existing performance appraisal system can be analyzed more deeply to find a solution. Existing problems can be taken into consideration for the process of designing a performance appraisal system that will be made as material for system requirements and feature analysis.

Quick Plan

Actor analysis is a stage where it will identify and then analyze to find out the actors who play a role and are involved in the employee performance appraisal system. Based on the results of the needs analysis data collection that has been done previously, the performance appraisal system will have two main actors, namely admins and employees.

No	Aktor	Description
1	Admin	Admin as a user who can manage all the features of the employee performance appraisal application system. Admins can do CRUD create read update delete on master data such as employee data, branch offices, assessment aspects, score ranges. In addition, the admin can also create an assessment plan with predetermined indicators. Application settings can also be done only at the user level as admin..
2	Employee	Ordinary employees as users who fill out their own performance appraisal but do not get a role to approve their performance. Employees in the assessment feature can fill out employee performance appraisals according to the year and period that has been assigned. Fill in each assessment indicator according to the aspects with the achievements that have been made. Then the recap feature can see the results of individual assessments.
	Supervisor	The supervisor employee as a user who can approve the performance appraisal that has been done by other ordinary employees. superiors can approve the assessment on the approval menu. Change the approval status and write an approval note.

Table 1 Actor Analysis

Modeling Quick Design

The model depiction of the employee performance appraisal system uses an analysis model which is the basis for the development of a quick design. At the model analysis stage, the focus is to understand the needs and requirements of the system to be built (Pressman & Maxim, 2010).

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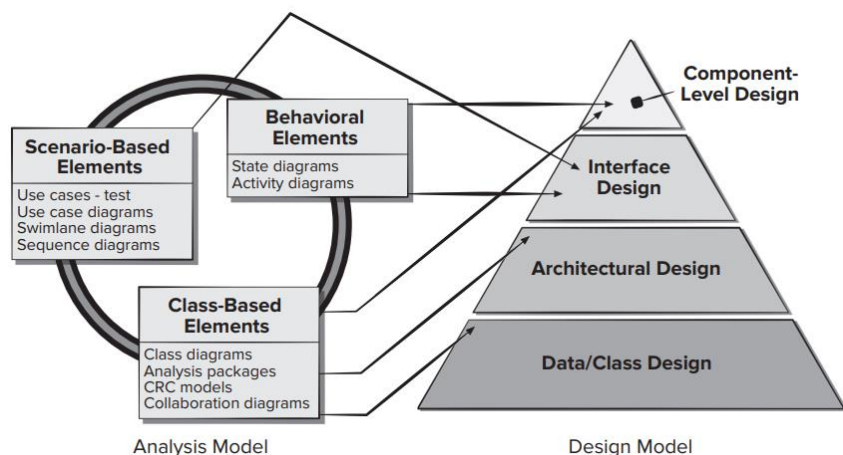


Fig. 4 Diagram Analysis Model (Pressman & Maxim, 2010).

Class-based elements in the analysis model are structural representations of important elements in a software system. Class-based elements include classes that represent objects in the system, attributes that describe the data associated with each class, and methods that define the behavior or function of each class.

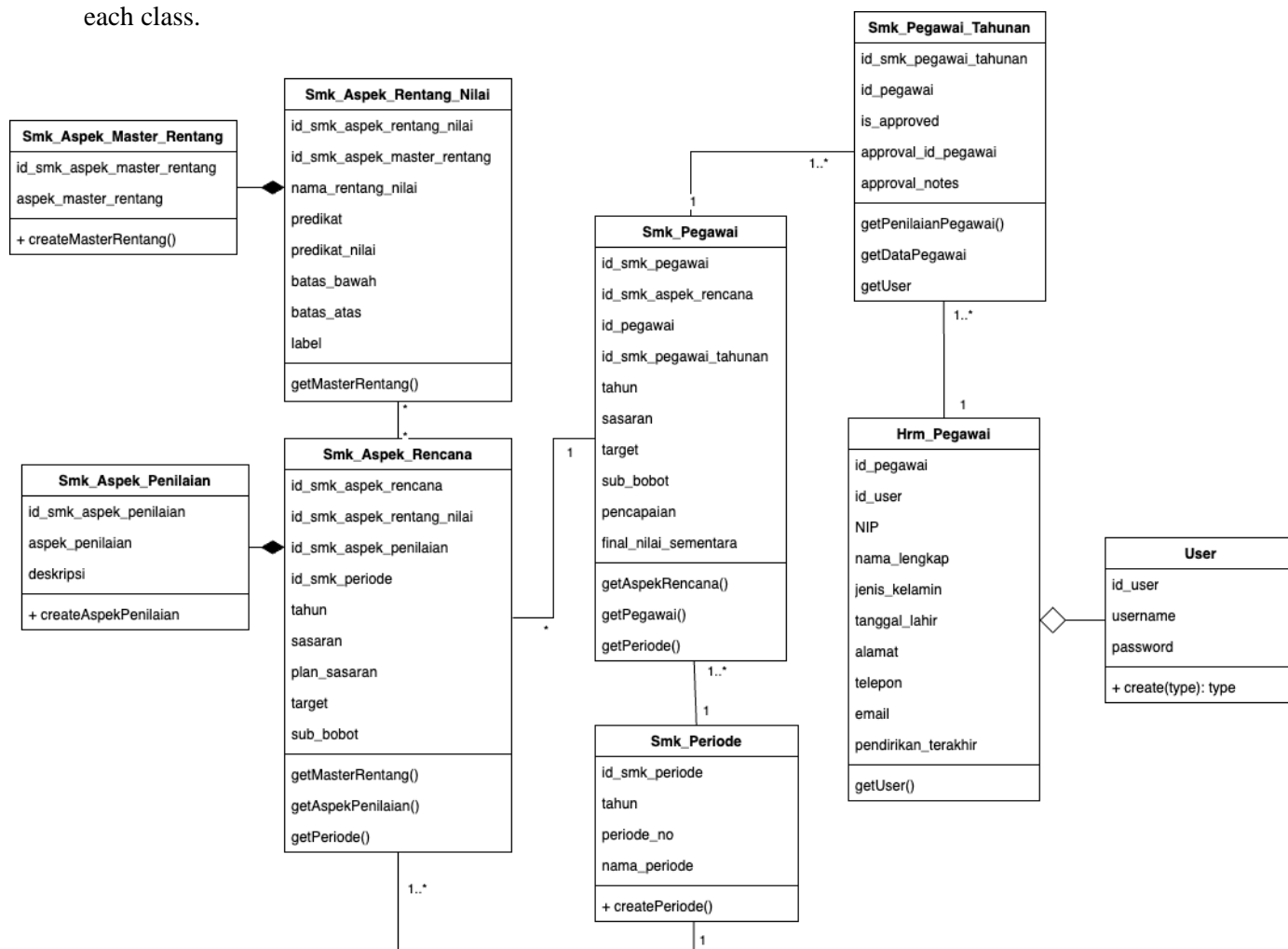


Fig. 5 Class Diagram

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Class diagram in making employee performance appraisal system is one type of diagram used to describe the classes in the system and the relationship between these classes. In this case, the class diagram will include classes related to assessment planning, assessment filling, assessment approval, and assessment recap.

Construction of Prototype

The construction of prototype phase in the prototyping model for the creation of an employee performance appraisal web system is the stage where the actual application prototype is built based on the previously defined specifications. By design while developing the initial prototype can improve its quality and functionality based on feedback from users.

- a. Employee performance appraisal form
On this page, employees are required to input their performance achievements during the specified period. Once the entries are completed, employees are responsible for submitting the appraisal form for approval by their supervisor.
- b. Supervisor's performance appraisal review page
The supervisor has the authority to reject or approve the assessment. In case of rejection, an evaluation meeting will be conducted between the supervisor and the subordinate. This is a crucial element of the scoring system, as it allows both parties to discuss and document achievements, as well as conduct evaluations.
- c. Assessment recap view
Display of the annual employee performance appraisal summary, presenting the results for each assessment period and the corresponding index value based on the organization's prescribed criteria and calculation.

Deployment, Delivery & Feedback

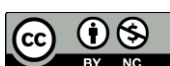
Once the prototype is built, the system developer sends the prototype to the user for evaluation. The user provides feedback on the prototype, and the system developer makes improvements or adds new features if needed.

- a. Implementation of employee performance appraisal form
Implementation of employee performance appraisal form in accordance with the specified year and period. Employees can input by writing the form in the performance achievement column. The value that has been entered by the employee will be saved by the system after the employee presses the "Save" button.
- b. Implementation of supervisor's performance appraisal review page
This is the appraisal approval page. The performance achievement data that has been filled in by the employee and saved into the system then needs to be approved by the employee's supervisor. Superiors can filter which performance appraisals need to be done by approving.
- c. Implementation of assessment recap view
Employees who have filled out performance appraisals and have been approved by superior employees, the results of their assessment can be seen by the admin through the performance appraisal recap page.

Blackbox Testing

Blackbox testing is done by testing the system from the interface and workflow side only, so that it can test whether the system can run properly according to user needs. Blackbox testing is a testing method that is carried out internally without having to show the content but still shows the test results to external (Rambe et al., 2020). In the deployment phase of the employee performance appraisal system prototype. By paying attention to the alignment between the implemented prototype and the real needs of users so that the employee performance appraisal system can run smoothly and provide the expected benefits for the organization and employees.

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Create Plan Performance Appraisal					
Condition	The user has logged in with the role of an admin.				
Test Id	Description	Steps	Expectation	Result	Suitability
RP.01	Creating a New Appraisal Aspect	<ol style="list-style-type: none"> 1. Enter the appraisal aspect menu. 2. Add a new appraisal. 3. Fill in the appraisal input form. 	The appraisal aspect data has been successfully saved and can now be displayed on the appraisal plan page.	The new appraisal aspect has been successfully saved to the database and is displayed in the appraisal plan.	100%
RP.02	Creating an Appraisal Plan	<ol style="list-style-type: none"> 1. Enter the appraisal plan menu. 2. Select the year and appraisal period. 3. Add a new indicator. 4. Fill in the input form to create a new appraisal indicator. 	New appraisal plan data has been added, and the system displays the appraisal plan according to the specified year and period.	The new appraisal plan with the set indicators has been successfully saved to the database and is displayed according to the assessment period and year.	100 %
RP.03	Viewing the appraisal summary	<ol style="list-style-type: none"> 1. Enter the appraisal summary menu. 2. Apply a filter to select the year. 3. Choose the employee for whom you want to view the appraisal summary. 	Appraisal summary data has been successfully displayed as requested when using the filter.	Data from the database is successfully displayed in the system according to the desired data.	100%
RP. 04	Setting Appraisal Approval.	<ol style="list-style-type: none"> 1. Admin enters the appraisal approval set menu. 2. Applies a filter to select the year and period. 3. Selects employees who do not have an assigned supervisor for approval. 	Employee appraisal data is successfully displayed according to the inputted employee	Employee appraisal data has been successfully displayed according to the inputted	100%

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		4. Specifies the supervisor who will conduct the appraisal approval.	data. Then, the admin can determine the supervisor who will conduct the approval.	employee data. After the admin determines the supervisor who will conduct the approval, the data is also successfully saved by the system.	
RP.05	Manage Master Data Period	1. Admin entered the period menu. 2. Admin added a new period. 3. Admin filled in the period input form.	The new period data has been saved to the database and is now displayed by the system.	The data has been successfully saved to the database and displayed in the system.	100%

Table 2 Blackbox testing

System Usability Scale

System Usability Scale (SUS) is the last testing stage in the development of an employee performance appraisal system carried out by end users to ensure the application system meets their needs (Saputra, 2019). SUS is to determine the suitability of a system for user needs. The focus in this test is to check whether the application developed has met the criteria and user needs or not. The results of SUS testing will be a reference for developers to make improvements or adjustments to the system before it is fully implemented (Lewis, 2018).

Participant	Q-1	Q-2	Q-3	Q-4	Q-5	Q-6	Q-7	Q-8	Q-9	Q-10	SUS Score:
P-1	5	1	3	1	5	2	4	1	5	4	82,5
P-2	4	2	4	2	4	2	5	2	4	5	70,0
P-3	4	2	5	4	4	1	4	1	5	4	75,0
P-4	5	1	4	3	5	1	5	1	4	5	80,0
P-5	4	2	4	3	4	1	4	1	4	4	72,5
Final Score											76,0
Grade SUS											B
Acceptable Ranges											Acceptable

Table 3 System Usability Scale

Testing is carried out effectively to identify problems and system deficiencies. System Usability Scale (SUS) testing received a score of 76 with the category "Acceptable" Grade B. The score obtained means that users can easily use this application without significant difficulties.

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CONCLUSION

Testing web-based employee performance appraisal applications using the prototyping model method plays an important role in ensuring the quality and suitability of the system. In the prototyping stage, testing is carried out effectively to identify problems and system deficiencies. System Usability Scale (SUS) testing received a score of 76 with the "Acceptable" Grade B. This means that the application system has been well received by users

However, this still allows the development team to make improvements and adjustments so that the system can meet the desired requirements before full implementation. For example, paying attention to security needs because this system will store sensitive employee data. Implement strong authentication mechanisms, data encryption, and protection against security attacks such as SQL injection or cross-site scripting (XSS). Also pay attention to the system's compliance with applicable data privacy regulations.

The website-based employee performance appraisal application system designed with the prototyping model method can be an important reference in evaluating employee performance and become a decision support for management to make decisions regarding promotion or salary increases.

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