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Web-Based Decision Support Information System Design of Lecturer Performance Assessment at the Faculty of Islamic Studies, Islamic University Attahiriyah

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ABSTRACT

Faculty of Islamic Attahiriyah Islamic University (UNIAT) Jakarta is one of the private universities under the auspices of the Region I Jakarta Coordinator of Islamic Religion (KOPERTAIS), In the process of evaluating the performance of lecturers in the Islamic Faculty of the Islamic University of Attahiri, every year. Lecturers who are selected as lecturers by having excellent performance appraisals will later get an award from the Faculty leadership (Dean of the Faculty of Islamic Religion). From this process, it takes a long time to process the calculation of who the lecturer is by assessing his excellent performance and also documents stored in the form of files stored on the archive shelf. One problem solving to find a solution from the system that runs above is by designing a decision support system application for lecturer performance assessment using a web-based Weighted Product (WP) method so that the lecturer performance appraisal can be done in real-time and efficiently. Software The application of lecturer performance appraisal decision support can be applied directly as a problem-solving solution, carry out maintenance on the application regularly every month so that something or damage occurs so that if a problem occurs it can restore the database again.

INTRODUCTION

The award system related to aspirations and motivations among lecturers is expected to be one of the ways in developing academic management in each university. In addition, the award system will be an important element and have a role in fostering an academic atmosphere. Referring to the above thought, it is appropriate to give awards to lecturers who have achievements that are proud of by the Higher Education in the field of Higher Education. The awarding will encourage lecturers to perform more productively. Thus the increasingly productive achievements are expected to encourage the achievement of the goal of developing the higher education system in particular, and national development in general tasks and work performance.

In the current system process to assess the performance of Lecturers in the Islamic Faculty of Islamic University of Attahiriyah, the current system is still by collecting files such as participant performance forms, student questionnaire forms, lecturers, leaders and LPPM by selecting the highest value on the assessment of faculty performance achievements, then processed with the Microsoft Excel application to add up and find the average and highest value. From this process, it takes quite a long time to process the calculations, who is the lecturer with a very good performance evaluation and also documents

stored in the form of files stored in the archive rack. the decision support of lecturer performance appraisal uses web-based Weighted Product (WP) methods so that the lecturer performance appraisal can be done in realtime and efficiently.

Information systems are "a series of formal procedures where data is grouped, processed into information, and distributed to users". Information systems are ways that are organized to collect, enter, and process and store data, and ways that are organized to store, manage, control, and report information in such a way that an organization can achieve its stated goals [2]. Decision support systems (DSS) are usually used to support solutions to a problem or to an opportunity. Decision support system application (SPK) is used in decision making. Decision support system applications (SPK) use Computer-Based Information Systems (CBIS) that are more flexible, interactive, and adaptable that are developed to support solutions to specific unstructured management problems [3].

The method of developing information systems uses the waterfall model stage. At this analysis and design stage, it uses Unified Modeling Language (UML) and the system implementation stage will use an open-source object-oriented application with Apache web server, MySql Server database, PHP. The process of implementing a decision support system application for evaluating the performance of lecturers at the Islamic Faculty is carried out on local networks and the internet.

Weighted Product (WP) method is a method in determining a decision by multiplying to attribute rating, where rating each attribute must be raised first with the weight of the attribute in question. The process is the same as the normalization process [3].

Preferences for Ai alternatives are given as follows:

$$S_i = \prod_j^n = x_{ij}^{wj} \quad ; \text{dengan i= } 1,2,\ldots,m \tag{1}$$

Based on the description above there is an identification of research problems that will be raised by the writer is the lecturer performance appraisal system at the Islamic Faculty of Islamic University Attahiriyah still using conventional systems, the need to build a system in the process of evaluating lecturer performance with the design of decision support systems to improve the quality of lecturer performance. information system supporting the decision of web-based lecturer performance appraisal that can support the results of computer-based lecturer performance results. It is expected to contribute to theoretical concepts in designing information systems supporting the decision of lecturers' performance appraisal.

The results of this evaluation can be input for the developer (Puskom Islamic School of Islamic University Attahiriyah) so that the decision support system application can provide quality aspects in terms of effectiveness and satisfaction to all system users.

MATERIALS AND METHODS

This research will apply information systems development theory using the System Development Life Cycle (SDLC) development method with a waterfall modeling system, with stages including: analysis and design of the system with an object-oriented approach, implementation of the analysis and design using web-based programming languages such as PHP and MySQL database and web-based application testing.

The sampling method in this study was purposive sampling. Sampling with purposive sampling is a sampling technique by taking respondents selected correctly by researchers according to the specific characteristics possessed by the sample. (Nasution, 2009: 98)

Respondents in this study are leaders, lecturers/peers, students and LPPM Islamic Faculty of Islamic University Attahiriyah. The selection of these sample respondents is based on their involvement in the system so that the sample selection becomes more representative.

The analysis technique used in this study is to use the Object-Oriented Analysis (OOA) approach or object-oriented analysis.

Analysis of system documents that are already running. Analyze the needs of the results of interviews with related parties. Analysis of the data that has been collected the results of document processing and others. In the analysis process, there are four types of analysis carried out, namely:
1. Analysis of the current system.
2. User Analysis. At this stage, an analysis of users who will use applications created by business actors is carried out.
3. Analysis of Functional and Non-Functional Needs. What functions can each user get by modeled using a business use case diagram? Functional requirements modeling is done using Use Case Diagrams.
4. System Behavior Analysis. At this stage, an analysis of system behavior is developed and modeled with Activity Diagrams, Sequence Diagrams, and Collaboration Diagrams.

The design technique used in this study uses the Object-Oriented Design (OOD) approach and uses Unified Modeling Language (UML).
1. Program design or system specifications, using Unified Modeling Language (UML) which includes:
   a. Making Class Diagrams.
   b. Making a Package Diagram.
   c. Making a Deployment Diagram.

2. Designing the user interface (Navigation, Input form, Output form)
3. Database Design (ERD), what data is stored, the data format used, where the data will be stored Database design (ER diagram)
4. Architecture design (hardware, software, network), modelled with Architecture design (deployment diagram)

System Testing Techniques

Testing techniques or testing conducted in this study in the following ways:

1. Testing user acceptance. Done by using a questionnaire distributed to system users with black-box testing techniques. The instrument in testing system acceptance by questionnaire method. The questionnaire was distributed to respondents, namely: Leaders, Staff, Lecturers, Students at the Faculty of Islamic Studies Attahiriyah Islamic University consists of questions - questions include:
   a. Questions to test system functionality.
   b. Questions to test the speed of information services.
   c. Questions to test the results of system analysis and design.
2. Testing the proposed application is done by testing with the Black Box System technique.

Research Steps

In the development of information systems, the entire process must go through several stages. In this study, the method of developing information systems in the Waterfall model is used. Therefore, the conceptual framework of this research is carried out through the stages of conducting research carried out with the following steps:
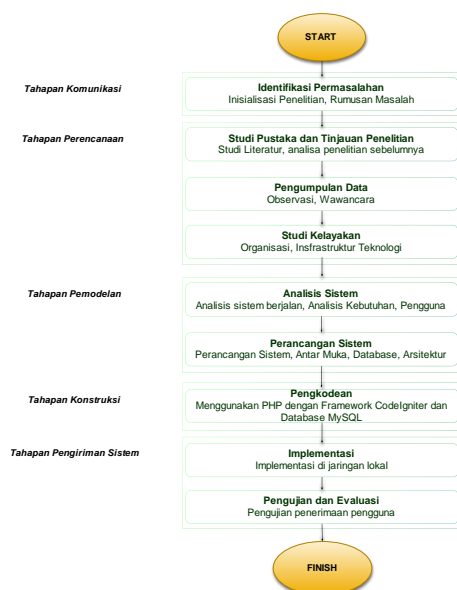

Figure 1. Research Steps

RESULTS AND DISCUSSION

The series of results of this study conducted a system analysis process in which the system must provide information or describe what should be done by the system in meeting user information needs. This system analysis will answer all the questions that will be done by the system, then who uses the system and when the system will be used. This system analysis activity is carried out using an object-oriented analysis approach for the system to be designed which means focusing on the functionality of the system that is running

The discussion is an explanation of testing the application of information systems supporting the decision of the performance evaluation of the lecturers of the Islamic Faculty of Islamic University Attahiriyah. The main purpose of testing is to find errors and functions of software that are not in accordance with the objectives of systematic development.

User Analysis

According the identification of functional needs through interviews and observations of the Islamic Faculty of the Islamic University of Jakarta Attahiriyah get user specifications and functions obtained by each user. The user-level is intended to secure the database of unauthorized users and to limit user access rights. To get access rights in accordance with the level of the user through Login to the application system supporting the decision to assess the performance of lecturers using the username, password, and user-level that has been given. User analysis and access rights for each user are described in the following table:

Table 1. User Levels and User Access Rights

No	Tingkatan Pengguna	Hak Akses Pengguna
1	Administrator	Can access information on the number of participating lecturers, participant lecturer data, criterion data, criteria sets, calculations and system settings
2	Leader	Can access fill performance appraisals for each participating lecturer?
3	Lecturer	Lecturers can fill in the relevant biodata and can assess for peers who take lecturer performance appraisals.
4	Students	I can access the filling out of the performance questionnaire

No	Tingkatan Pengguna	Hak Akses Pengguna
		assessment for each participating lecturer.
5	LPPM	Can access fill lecturer research qualification assessments for each participating lecturer?

Use Case Diagrams

Based on the specification of functional needs and actors involved in the system, it can be modeled using use case diagrams. Use case diagrams illustrate the expected functionality of a system. Use cases present interactions between actors and systems.
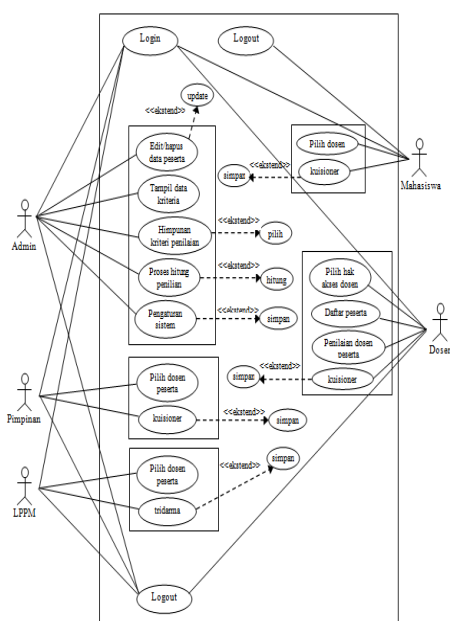

Figure 2. *Use Case Diagram*

Activity Diagram of calculation of participant lecturer performance by admin

In this process, calculations are displayed for lecturers who are already registered in the system. Admin chooses the calculation menu and then the system displays the participant lecturer table form and the calculation process is carried out. The results of the system calculation process display the weight improvement table and the results table of the best lecturer performance selection assessment.

Table 2 Activity Diagram
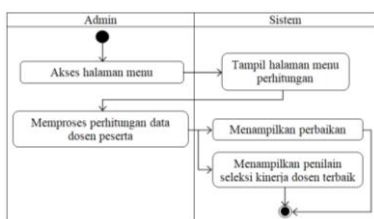
Sequence Diagram of Calculation Process

Sequence diagram calculation, access rights that can use this calculation process is the admin. Admin has full access rights to this process. Admin has control to carry out the calculation process from participant lecturer data. In the application displays the data table of the assessment participants and the calculation process button, then the admin performs the calculation process and then the application displays the results table from the calculation process. What is shown is a weighting table and a table of the results of the lecturers' performance evaluation. For the calculation process described in Figure 2.
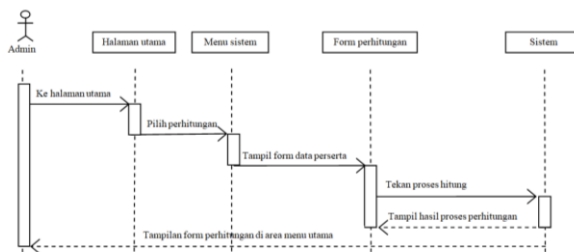

Figure 3. Sequence Diagram Calculation Process

Case Diagram

Following is the class diagram for the application of decision-support information system performance appraisal lecturers at the Islamic Faculty of Islamic University Attahiriyah, designed in Figure 3.
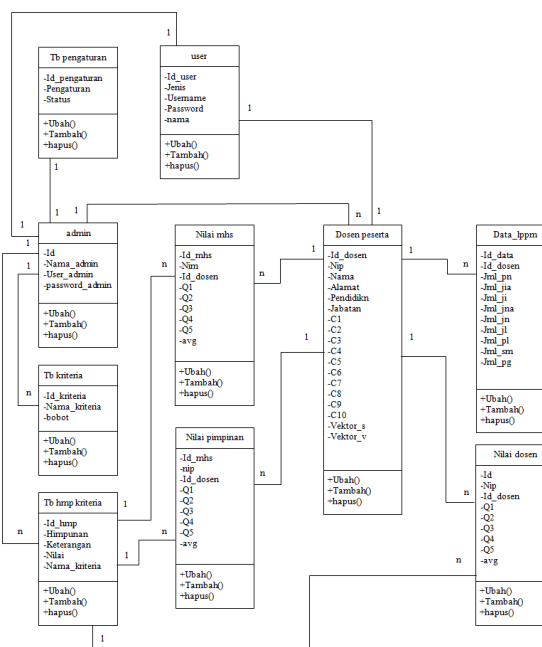

Figure 4. Class Diagram
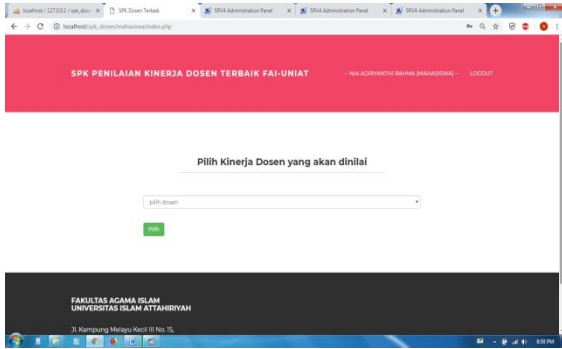
1. Student Dashboard

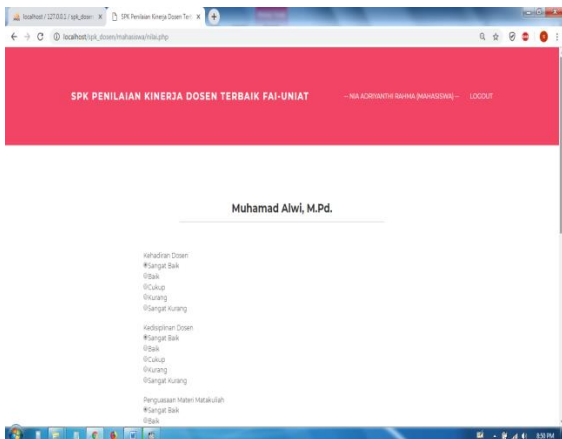Figure 5. Student Menu Dashboard Design Selection of Lecturer Performance

Figure 6. Design of Filling Out of Participant Lecturer Performance Assessment
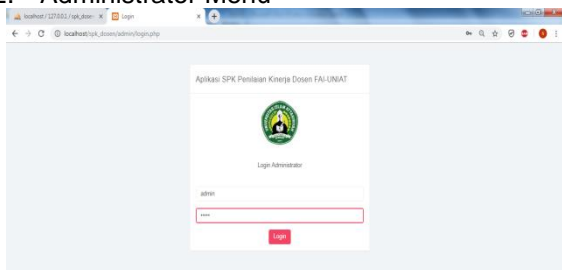
2. Administrator Menu
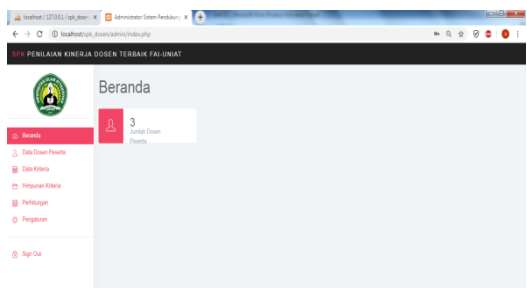

Figure 7. Administrator Login Design
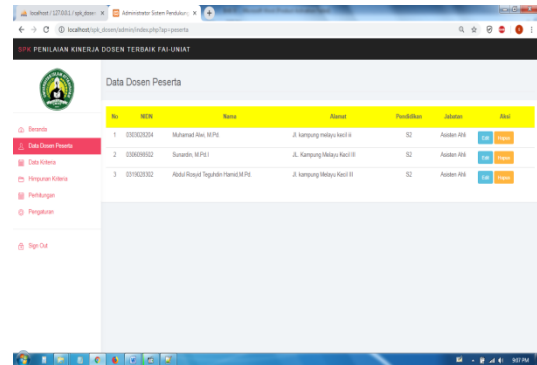

Figure 8. Design Menu Home Administrator

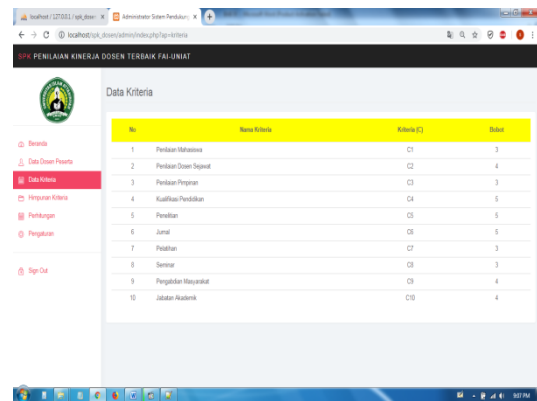Figure 9. Design Data of Participant Lecturers

Figure 10. Design Data Criteria

Software Testing With Black Box System Method
Testing the application of information systems supporting the decision of the performance evaluation of the lecturers of the Islamic Faculty of Islamic University Attahiriyah. The main purpose of the test is to find errors and functions of the software that are not in accordance with the objectives of systematic development.

Tabel 2. Aplication Test Result

No	Scenario	Expected Result	Conc.
1.	Log in process	Login data input is incorrect or incorrect, the application program notifies that the login failed	**VALID**
2.	Log in process	Login data is correct or appropriate, the application program notifies that the login is successful	**VALID**
3.	Menu form	Run each application menu and run	**VALID**

No	Scenario	Expected Result	Conc.
		well. Running the lecturer data menu criteria, criterion data, set of criteria, calculations, settings.	
4.	Menu form	Running the edit and delete data command, the application displays the notification data can be edited/deleted	**VALID**
5.	Logout process	Exit the application program and display the logout notification successfully	**VALID**
6.	The process of filling out the questionnaire	Displays the filling form for the questionnaire, filling out the questionnaire, and the stored data	**VALID**
7.	The process of filling out the registration	Displays the biodata filling form of participant lecturers, and the stored data	**VALID**

No	Scenario	Expected Result	Conc.
8.	The qualification filling process	Displays the form filling lecturer research qualifications, filling out qualifications and stored data	**VALID**

CONCLUSIONS AND SUGGESTION

In the conclusion, it can be concluded that it has been proven, namely: it is suspected that the design of information systems supporting the decision of the performance evaluation of lecturers of the Islamic Faculty of Islamic University Attahiriyah will help a more effective assessment process using the SDLC system development method with a waterfall model that can form a system that passes the quality testing with the black box testing method in accordance with the needs of the Islamic faculty. Software Applications supporting the decision to evaluate the performance of lecturers can be applied directly as a solution to solving problems. If needed, provide suggestions for further research.

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