Jurnal Mantik
Volume 4, Number 1, May 2020, pp. 731-738 E-ISSN 2685-4236
https://iocscience.org/ejournal/index.php/mantik

# Designing Information System Evaluation Of Lecturer Teaching Activities As An Implementation Of Internal Quality Guarantee System In The Unas Information System Study Program

M Alwi Saepul Zaman[1], Septi Andryana[2], Ratih Titi Komalasari[3]

[1]Sistem Informasi, Fakultas Teknologi Komunikasi dan Informatika, Universitas Nasional, Jalan Sawo Manila, Jakarta, 12520, Indonesia

E-mail: Malwisz.0298@gmail.com

ARTICLE INFO

Article history:
Received: 04/04/2020
Revised: 20/04/2020
Accepted: 30/05/2020

**Keywords**:
Unit Penjaminan Mutu (UPM),
Code Igniter (CI),
MySQL,
Waterfall

ABSTRACT

*The rapid development of technology presents many benefits and conveniences for mankind to help complete its work in the fields of life, business, and education. The UNAS information system Unit Penjaminan Mutu (UPM) as part of the UNAS Badan Penjaminan Mutu (BPM) to evaluate lecturer recruitment activities in the UNAS information system study program to ensure the quality of education. The implementation of quality assurance units that are already running requires a computerized system process to increase the quality and quantity in the process of evaluating the teaching performance of lecturers. The evaluation process is still manual by using the Microsoft Excel application. The speaker here is designing a website based application using the PHP framework, namely Code Igniter (CI v.3) and MySQL DBMS. By using the SDLC waterfall design method and system testing using the black-box method.*



## 1. Introduction

The development of technology at this time the computer becomes a tool that greatly helps human performance that is applied to the needs of system performance. The computer is determined as a tool to help design the achievement of several goals such as helping in solving problems. Technological developments in this era of globalization have caused a lot of complex competition in all areas of life, be it faced by individual communities or organizations, or companies, and education, especially in services that give rise to information becomes important for decision making. Permenristekdikti No. 62 of 2016. About the Higher Education Quality Assurance System. In pasal 3, which is contains the types of Quality Assurance System which consists of: Internal Quality Assurance System (SPMI), and External Quality Assurance System (SPME). Which SPM aims to ensure the fulfillment of Higher Education Standards systemically and sustainably so that quality culture can grows and develops [1].

National University (UNAS) as part of L2DIKTI is required to wait for SPMI to run independently to provide and improve the implementation of systemic higher education and planning and maintenance. Because SPMI which is implemented by every tertiary institution has an activity cycle abbreviated as PPEPP consisting of Determination, Implementation, Evaluation, Control, and Improvement. In the world of education, especially universities, lecturers are one of the factors that play an important role for the goals of higher education. Lecturers are one of the important components in an education system in higher education. The roles, tasks, and responsibilities of lecturers are very important to realize the goals of national education, to carry out the functions, roles and positions that are very strategic, professional teaching staff is needed [2]. Lecturers are embedded as professional and scientific educators with the main task of transforming, developing, and disseminating knowledge, technology, and art through education, research, and community service. Meanwhile, professionals are declared as jobs or activities carried out by someone and become a source of income for life that requires expertise, skills that meet certain quality standards or norms and requires professional education. The main task of the lecturer is to carry out three higher education tridharma with a workload of at least equivalent to 12 (twelve) University Credit Units (credits) and a maximum of 16 (sixteen) University Credit Units (credits) in each semester in accordance with academic qualifications. The implementation of the task needs to be evaluated and reported periodically as a form of accountability as the performance of lecturers to stakeholders [3].

The UNAS information system Quality Assurance Unit (UPM) has done an evaluation manually from the data input process, and analysis, thus problems in the evaluation often occur resulting in a slow evaluation process and a lack



**Accredited "Rank 4"(Sinta 4),** DIKTI, No. 36/E/KPT/2019, December 13th 2019.

of efficiency in finding the previous data. because the process is manual, therefore the author here is designing a web-based information system in the hope that the evaluation process is more effective and efficient and provides convenience to search data that has been long when needed.

## 2. Rationale

### 2.1. Literature Revew

#### 2.1.1. Higher Education Quality Assurance System (SPM-PT)

Higher education quality is the process of planning, fulfilling, controlling and developing higher education standards that are carried out consistently on an ongoing basis, with internal and external stakeholders getting higher satisfaction from higher education performance and output. The purpose of higher education quality assurance is the fulfillment of the quality of higher education quality through input, process, and output based on legislation, basic values, vision and mission of higher education. This quality assurance activity is an embodiment of higher education accountability and transparency [4].

#### 2.1.2. Information System

#### 2.1.3. Monitoring Evaluation

Etymologically, monitoring is a monitoring or observation activity that takes place during the activity to ensure, and control the harmony of the implementation of the program with a predetermined plan. Meanwhile, research monitoring is a monitoring activity of the research program so that its implementation is in accordance with the established plan. And evaluation is an effort to assess the quality of the program and its results periodically by using the right approach. Research evaluation means an effort to dig up information about the research process and results to assess its quality using the right approach [6].

#### 2.1.4. Framework Code Igniter

A framework is a work agreement. The framework can also be interpreted as a collection of scripts (specifically classes and functions that can help developers / programmers handle various programming problems such as connection to databases, call variables, and files. Php frameworks that run on php 4 and php 5. The main purpose from CodeIgniter is to facilitate programmers in developing applications quickly without having to make programming from scratch [7].

CodeIgniter is an open source application that consists of a framework with the MVC model (Model, View, Controller) to build dynamic websites using PHP. The CodeIgniter developer makes it easy to create web applications quickly and easily compares with ease from the start.

1. View, is a part about presentation logic, view functions to receive and perst data to the user. This section does not have direct access to parts of the model.
2. Model, is a part that is usually associated with the database to manipulate data (insert, update, delete, search) and handle validation from the controller part. This section cannot be directly related to the view section.
3. Controller, is the part that regulates the relationship between the model and view section, the controller functions to receive requests and data from the user then determine what will be processed by the application.

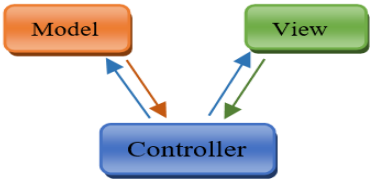


**Fig** 1. MVC Code Igniter Architecture.



**Accredited "Rank 4"(Sinta 4),** DIKTI, No. 36/E/KPT/2019, December 13th 2019.

### 2.1.4. DBMS MySQL

DBMS is software that is used to build computerized data bases. DBMS also helps in processing large amounts of data [8]. The language used is divided into two types among them:

1. DLL (Data Definition Language)
   Is a collection of syntax used to describe the design of the database as a whole.
2. DML (Data Manifulation Language)
   Is a collection of syntax used to manipulate and retrieve data in a database.

MSQL is a popular Database Management System (DBMS) that has a function as a Relational Database Management System (RDBMS). MSQL software is an application that is Open Source and MySQL database server has a very fast, reliable, and easy to use and works with client server architecture or embedded systems.

## 3. Research Method

Information system development method is a method used in developing computer-based information systems. The SDLC method is a classical methodology in the development, maintenance, and use of information systems.

In this study, the authors used a waterfall information system development model. The waterfall method is a sequential software development process, continuously flowing downward (like a waterfall) through the phases of planning, modeling, writing, implementation, and testing.

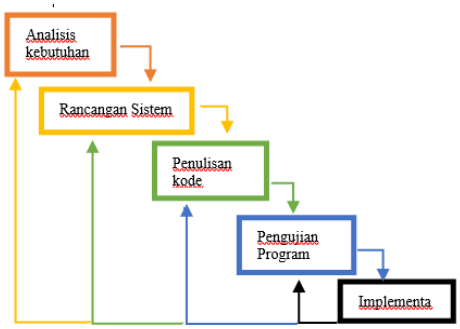


**Fig** 2. Stage of The Waterfall Method.

The waterfall development method begins with a system requirements analysis that is, the process of defining the needs of the system to be developed. Then the second system design that is, the process of pouring thoughts and system design of solutions to existing needs problems. The third stage is writing code. that is, the process of translating designs in languages that are understood by computers. The fourth stage of the testing program. that is, the ability and effectiveness testing process so that known weaknesses and strengths of the system are followed by a review. The last is implementation, which is the process of delivering software to customers.

The advantages of the developed system refer to a more effective and efficient monitoring and evaluation process. The aim is to produce an evaluation monitoring information system that is expected to provide ease of information to UPM Information systems, deans, study programs, BPM, and lecturers.

## 4. Results and Discussion

### 4.1. Requirements Analysis

Needs analysis is done to produce input for system design in the form of business process diagrams, and data flow from the system to be made. From the diagram, the system engineering needs include software, hardware, server and network that are needed in the design and implementation of this evaluation information system.

The system developed is the evaluation information system of lecturer teaching. This system was built to help the evaluation process held in the Information Systems Study Program Quality Assurance Unit.

This system is connected to a database server to store evaluation data on lecturers and gives a percentage value to UPM to assist in the evaluation process in digital form.



**Accredited "Rank 4"(Sinta 4),** DIKTI, No. 36/E/KPT/2019, December 13th 2019.

Where the values that appear in digital form such as tables and graphs will be seen by the Head of Study Program and the Dean to monitor how the performance of lecturers in conducting learning towards students.

### 4.2. Design System

#### 4.2.1. Use Case Diagram

Use Case Diagrams illustrate the relationship of actors with business processes that exist in the system. The following picture and explanation.

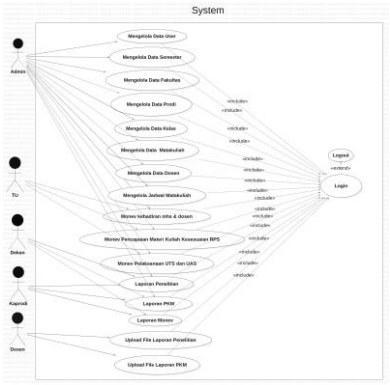


**Fig** 3. Use Case Diagram Information System Evaluation of Teaching Lectures.

The design is done from the needs analysis. There are 5 types of users, namely: admin, TU, dean, head of study program, and lecturer.

1. Admin manages user data and manages all monitoring evaluation data of learning, research reports, and PKM lecturers.
2. TU manages the learning evaluation monitoring data.
3. The dean monitors the learning evaluation monitoring report, research report, and PKM lecturer.
4. Head of study program monitors the monitoring and evaluation reports of learning, research reports, and PKM lecturers.
5. The lecturer uploads the research files and PKM.

All evaluation system users are required to log in first.

#### 4.2.2. Class Diagram

Activity Diagram is a diagram that illustrates the Blueprint Project on the system / software that is being built. Illustrated in Figure 4.

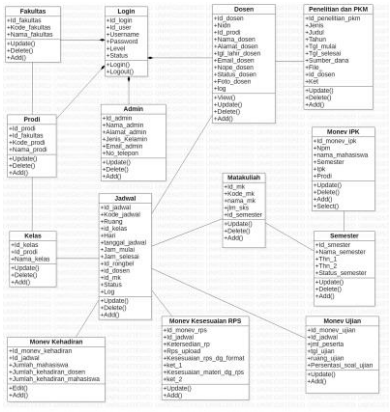


**Fig** 4. Class Diagram Information System Evaluation of Teaching Lecturers.

#### 4.2.3. Activity Diagram

Activity Diagram is a diagram that illustrates the activities in the system or program. Activity diagram illustrated in Figure 5.



**Accredited "Rank 4"(Sinta 4),** DIKTI, No. 36/E/KPT/2019, December 13th 2019.

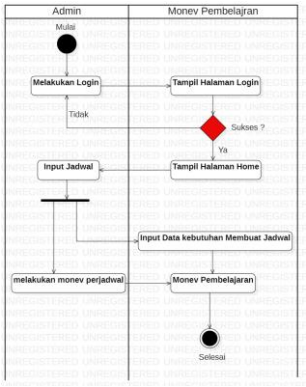


**Fig** 5. Activity Diagram Information System Evaluation Teaching Lectures.

### 4.3. Coding

At this stage the authors begin to build applications / software in accordance with the results of the analysis of system requirements, and system design so that the results given are in accordance with what the user wants. In building this application / software, the author uses one of the Frameworks from PHP, namely Code Igniter Igniter (CI v.3) using MySQL DBMS to store data, Javascript, and Jquery to display a more dynamic web.

### 4.4. System Testing

Testing the system on this teaching evaluation information system using Black-box is a test conducted on the functional requirements of the system / software. This test pays more attention to the control structure. Data and evaluation aspects are inputted by users who have access rights to input data.

### 4.5. Implementation

Lecturer teaching evaluation information system at this stage implements a system interface that is in accordance with the system requirements analysis and system planning process. Here are the results of taking pictures step by step in the system.

a) Login Pages

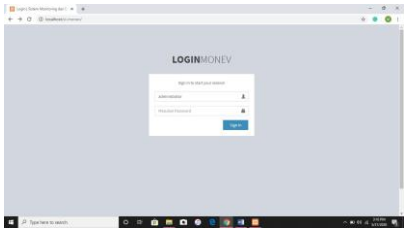


**Fig** 6. Login Pages SI-Monev.

This login page is also called the entrance page to the system, all users must fill in their user name and password to access the system.

b) Home Page

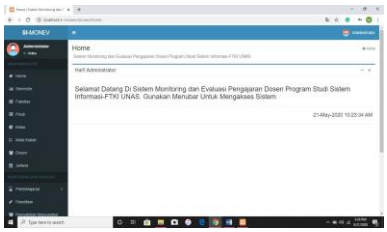


**Fig** 7. Home Page SI-Monev.

The Main Page (Homepage) is also called the system guest room page, all users access the system using the menu bar that is available and in accordance with their respective access rights.



**Accredited "Rank 4"(Sinta 4),** DIKTI, No. 36/E/KPT/2019, December 13th 2019.

c) Input Data Page

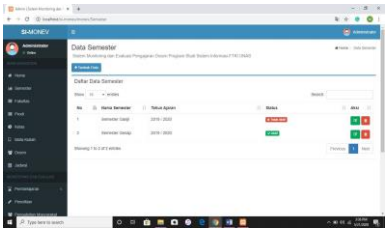

**Fig** 8. Semester Input Page.

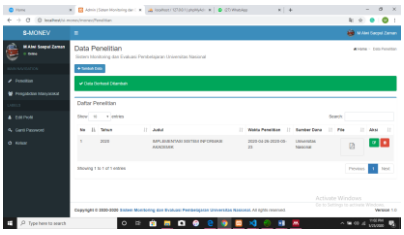

**Fig** 9. SI-Monev Lecturer Research Input Page.

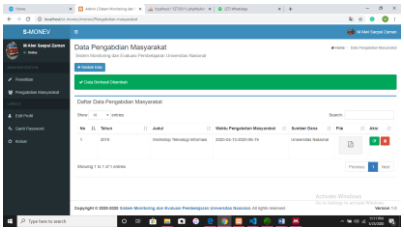

**Fig** 10. Input Page for Community Service by SI-Monev Lecturer.

The SI-Monev input page above functions to add data, update data, and delete data needed for the evaluation monitoring process. For input pages in figures 8 - 10 can only be accessed by UPM and TU admins, while for input pages in figures 15 & 16 can only be accessed by lecturer access rights.

d) Evaluation Monitoring Page

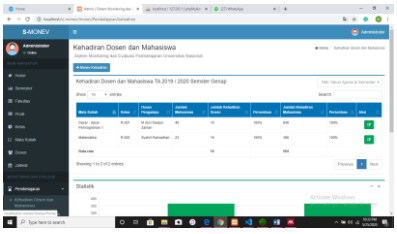

**Fig** 11. Monitoring and Evaluation Page for SI-Monev Learning.

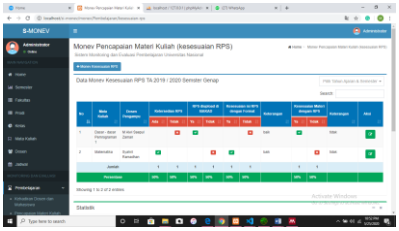

**Fig** 12. Monitoring Page Evaluation of Achievement of Lecture Material (RPS Conformity).



**Accredited "Rank 4"(Sinta 4),** DIKTI, No. 36/E/KPT/2019, December 13th 2019.

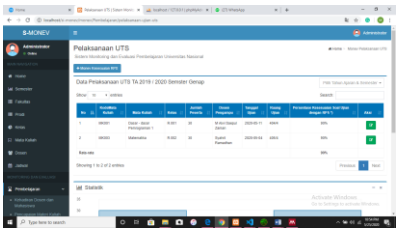

**Fig** 13. Monitoring Page Evaluation of UTS.

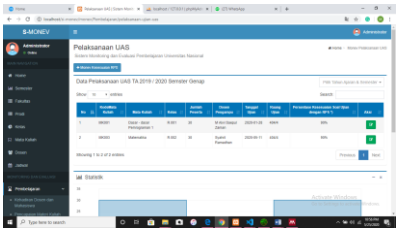

**Fig** 14. Monitoring Page Evaluation of UAS.

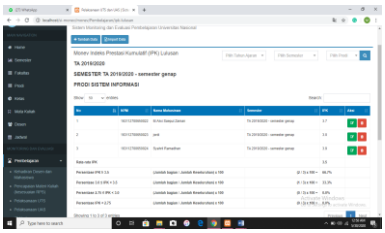

**Fig** 15. Graduate GPA Monitoring Page.

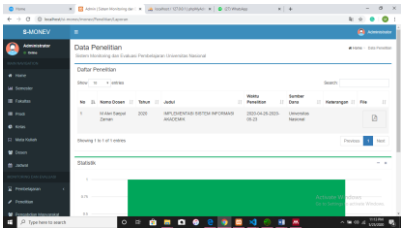

**Fig** 16. Lecturer Research Evaluation Monitoring Page.

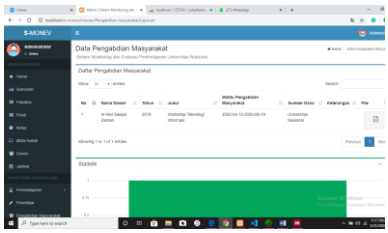

**Fig** 16. Monitoring Page of Evaluation of Lecturer Community Service.

## 5. Conclusions.

From the results and discussion related to the design of the teaching instructor evaluation evaluation information system, it can be concluded that this system was created to help part of the upm evaluation process for the education guarantee of the information systems study program of the faculty of communication and information technology at the national university. Monitoring evaluation conducted by the system is monitoring learning evaluation which includes monitoring the attendance of lecturers and student lectures, achievement of lecture material (suitability of rps),



**Accredited "Rank 4"(Sinta 4),** DIKTI, No. 36/E/KPT/2019, December 13th 2019.

implementation of uts & uas, and gpa of graduates of each class. Furthermore, monitoring the evaluation of research and community service. where the three points above are the obligations of lecturers as professional educators. The suggestion for future developers is to input data automatically from the baa data warehouse so that the evaluation process becomes more effective and efficient.

## 6. Referensi

[1] K. Riset, "Kebijakan Nasional Sistem Penjaminan Mutu Pendidikan Tinggi," no. 12, 2017.
[2] R. Faisal, "Aplikasi Penilaian Kinerja Dosen pada Proses Belajar Mengajar Berbasis Web : Studi Kasus di Badan Penjamin Mutu Internal Institut Teknologi Padang," vol. 5, no. April, pp. 89–93, 2017, doi: 10.14710/jtsiskom.5.2.2017.89-93.
[3] P. Studi, I. Keperawatan, E. K. Dosen, S. Informasi, and B. Web, "Kinerja Dosen Berbasis Web Pada Stikes Baiturrahim," vol. 10, no. 2, pp. 150–162.
[4] J. T. Informatika, F. Teknik, and U. N. Surabaya, "RANCANG BANGUN SISTEM INFORMASI UNIT PENJAMINAN MUTU ( UJM ) TEKNIK INFORMATIKA DI UNIVERSITAS NEGERI SURABAYA Eny Sukandari I Kadek Dwi Nuryana."
[5] D. Efinition *et al.*, "C ROWDSOURCING I NFORMATION S YSTEMS –," pp. 1–11.
[6] L. Penelitian, "Media Informasi Riset dan Inovasi Eedisi November-Desember 2017 Hal. 1," pp. 1–11, 2017.
[7] D. Rosmala, M. Ichwan, and M. I. Gandalisha, "Komparasi Framework Mvc(Codeigniter, Dan Cakephp) Pada Aplikasi Berbasis Web ," *J. Inform.*, vol. 2, no. 8, pp. 22–30, 2011.
[8] I. Warman and R. Ramdaniansyah, "ANALISIS PERBANDINGAN KINERJA QUERY DATABASE MANAGEMENT SYSTEM ( DBMS ) Oleh :," vol. 6, no. 1, pp. 32–41, 2018, doi: 10.21063/JTIF.2018.V6.1.32-41.
[9] S. V. Yulianto and A. P. Atmaja, "Rancang Bangun Sistem Informasi Kurikulum 2013 Tingkat Sekolah Dasar Berbasis Web dengan SDLC Waterfall," *Sisfo*, vol. 07, no. 02, 2018, doi: 10.24089/j.sisfo.2018.01.006.
[10] N. Fahmi, "Sistem Informasi Evaluasi Kinerja Dosen Berdasarkan Penilaian Mahasiswa ( Studi Kasus : Politeknik Negeri Bengkalis )," pp. 1–5, 2013.
[11] P. Christo, H. Sumarno, and W. Atmaja, "Sistem Informasi Evaluasi Dosen Pada Asian Banking Finance And Informatics Institute ( ABFI ) Perbanas," *Inf. Syst. Educ. Prof.*, vol. 2, no. 1, pp. 51–60, 2017.
[12] A. Darmawan and M. Hasibuan, "Analisis Dan Perancangan Aplikasi Sistem Informasi Audit Mutu Internal Dan Dokumentasi Penjaminan Mutu Perguruan Tinggi," *J. Generic*, vol. 9, no. 2, pp. 342–347, 2014.
[13] T. W. A. P. Victor Gayuh Utomo, "Sistem Informasi Evaluasi Kinerja Berbasis Web," *Senit*, vol. 2, pp. 15–17, 2017.
[14] A. Wijaya and J. Henny, "Aplikasi Evaluasi Kinerja Dosen Berbasis Web Pada Sekolah Tinggi Teknik Musi," *Semin. Nas. Teknol. Inf. Komun. Terap.*, vol. 2012, no. Semantik, pp. 481–486, 2012, [Online]. Available: http://eprints.dinus.ac.id/163/1/INFRM_72__-010_APLIKASI_EVALUASI_KINERJA_DOSEN_BERBASIS_WEB.pdf.
[15] W. Darmalaksana, "Sistem Informasi Monev Penelitian (Simonep) Uin Sunan Gunung Djati Bandung," *J. Inf. Ris. dan Inov.*, pp. 1–11, 2017.