Application of Monitoring Database for Accreditation Instrument UKI PAULUS

Lande Sudianto¹, Petrus Simon²

¹ Study Program of Electrical Engineering Study Program, Faculty of Engineering, [Universitas Kristen Indonesia Paulus]
² Study Program of Accounting, Faculty of Economics and Business, [Universitas Kristen Indonesia Paulus]

* Corresponding author: sudianto@ukipaulus.ac.id

Abstract. Accreditation is a form of quality and feasibility evaluation of higher education institutions or study programs conducted by independent organizations or bodies outside of tertiary institutions. To achieve the target of accreditation scores, universities and study programs must adjust their internal conditions in accordance with the standards given by the National Accreditation Board for Higher Education (BAN-PT). In accordance with Permenristekdikti No 32/2016, BAN-PT develops accreditation instruments that are relevant to the development of the higher education sector in Indonesia and follows the global developments. Study Program Accreditation Instrument (IAPS 4.0) BAN-PT uses 9 criteria. The Accreditation Instrument of Monitoring Database of the Study Program UKI Paulus was built using a PHP interface and MySql database that can integrate the entire contents of the data and other supporting documents so that during the evaluation processes, the information of achievement determined by BAN-PT from each standard is obtained. The system development steps, uses the Waterfall method which starts from the analysis phase, system design, program code writing, system testing and system maintenance. From 30 respondents who joined the test using black box method, the user accessibility level reached 95.52%. It shows that the system run optimally. This system is able to provide easy access and management of study program accreditation documents.

1. Introduction

Accreditation of higher education institutions is a process of comprehensive evaluation and assessment of the commitment of tertiary institutions to the quality and capacity of the implementation of tertiary education programs, to determine the feasibility of programs and educational units. Evaluation and evaluation in the context of institutional accreditation is carried out by a team of assessors consisting of peer experts and / or experts who understand the nature of higher education management. Decisions regarding quality are based on evaluations and assessments of various evidence related to established standards and based on the reasoning and consideration of peer experts [1] [2][3].

Evidence required includes a written report prepared by an accredited tertiary institution, verified and validated through a field assessment team visit or assessment to the university location. BAN-PT is an institution that has the authority to evaluate and assess, and determine the status and quality...
ratings of tertiary institutions based on established quality standards. Thus, the aims and benefits of accreditation of tertiary institutions are as follows:

a. Providing guarantees that accredited tertiary institutions meet the quality standards set by BAN-PT, so that they are able to provide protection for the public from the implementation of tertiary institutions that do not meet the standards.

b. Encourage universities to continuously make improvements and maintain high quality.

c. Accreditation results can be used as a basis for consideration in the transfer of college credit, the provision of assistance and allocation of funds, as well as recognition from other agencies or agencies.

The quality of a tertiary institution is a reflection of the totality of conditions and characteristics of the institution inputs, processes and outputs or services measured by a number of standards set by BAN-PT. Higher education accreditation standards include standards on higher education commitment to institutional capacity and commitment to the effectiveness of educational programs, which are packaged in seven accreditation standards.

Higher education performance assessments are based on meeting the demands of accreditation standards. Process able accreditation documents for tertiary institutions must have fulfilled the initial requirements marked by valid and valid permits in the administration of tertiary institutions from authorized officials; has a statute and statutes and strategic plan documents or master plan for development that clearly shows the vision, mission, goals and objectives of higher education; basic values adopted and various aspects regarding the organization and management of tertiary institutions, the decision making process of program administration; quality assurance system; and has a number of accredited study programs.

Colleges describe and analyze all the indicators in the overall context of the accreditation standards with regard to the dimension of quality, namely: relevance, academic atmosphere, the internal management and organization, sustainability, efficiency including productivity. Is the additional dimension of leadership, equity, and governance [2].

The accreditation status is a reflection of the performance of a Study Program in describing the quality, efficiency, and relevance of a study program at the UKI Paulus Makassar in particular the Electrical Engineering Study Program. Accreditation management has not been done by using a special system to handle the data needed in filling the accreditation instruments. Accreditation instrument data filing system of the Electrical Engineering Study Program UKI Paulus Makassar is still in the form of manual. The data required for accreditation are still stored in various sources, so as to perform the accreditation must collect the data that makes the manager seek accreditation data. Study programs often lose accreditation-supporting data in the form of attachments, and cause the lengthy process of compiling and filling tables on the accreditation instrument. In line with the development of information and communication technology that offers convenience and speed in conveying access to information to meet the needs of accreditation more quickly and easily. Then developed an accreditation forms database information system that can manage and store accreditation forms data, which at the same time can be a means of measuring the performance of the Study Program based on standards set by BAN-PT.

2. Methodology

The stages of the development of the Accreditation Form Database system in the Electrical Engineering Study Program UKI Paulus uses the SDLC (System Development Life Cycle) paradigm approach [3] shown in Figure 1 which consists of 5 stages:
1. Identification of system requirements, namely determining the devices needed in making the system both primary and secondary data, hardware and software.

2. System analysis and modeling, system analysis and modeling are carried out with a flow map to find out the functions or activities that will be applied in the system. Flow map system is made in the form of context diagrams, data flow diagrams, entity relationship diagrams, relationships between files, file structure, program structure, menu structure, input format and output format. Analysis and modeling of the system is done based on UML (Unified Modeling Language) [4].

3. Making the system, the process of making the software The Accreditation Instrument of Monitoring Database of the Study Program UKI Paulus is complete using UML techniques, namely the selection of program packages that are appropriately analysis suitable for building systems. Making the system starting from system design, database design, and system display design. The design of the system display serves as a reference to create a user interface in system implementation.

4. Testing and improving the system, carried out testing of The Accreditation Instrument of Monitoring Database of the Study Program UKI Paulus was based on the whitebox and blackbox testing methods. Whitebox testing is used to test the accuracy of the algorithm flow and data structure of the system created. And blackbox testing is used to test the truth of system functionality based on the results of needs analysis [5][6][7]. Testing is done in the evaluation year / academic year 2018/2019.

5. The system implementation is carried out on server computers and intranet networks of the Electrical Engineering Study Program UKI Paulus

3. Result and Discussion
Accreditation is carried out by BAN-PT on the basis of open criteria. Accreditation is a process undertaken to determine the feasibility of education programs and units in the formal and non-formal education channels at each level and type of education. Decisions regarding quality are based on evaluations and assessments of various evidence related to established standards. The purpose and benefits of study program accreditation is to guarantee that accredited study programs meet the quality standards set, encourage study programs to continuously make improvements and maintain high quality, and the results of accreditation can be used as a basis for consideration in transferring college credit, giving assistance and allocation of funds, as well as recognition from other agencies or agencies [5].

There are 9 (nine) standards that explain the commitment of undergraduate study programs to institutional capacity and commitment to the effectiveness of educational programs [1].
1. Vision, mission, objectives, and strategy
2. Civil service, governance, and cooperation
3. Student
4. Human resource
5. Finance, Facilities and Infrastructure
6. Education
7. Research
8. Community Service
9. Tridharma's Outcomes and Achievements

The results of the analysis of system requirements in the form of minimum specifications of hardware and software are used as follows:

Computer hardware, with specifications:
- Intel Duel Core Processor
- 32 GB hard drive
- 2GB RAM
- Mouse and keyboard

Computer software, consisting of:
- Microsoft Windows 7 Operating System.
- Macromedia Dreamweaver application.
- ApacheFriends XAMPP application.
- Browser: Mozilla Firefox, Google Chrome

The system flow map is made in the form of context diagrams, data flow diagrams, entity relationship diagrams, relationships between files, file structures, program structures, menu structures, input formats and output formats. This flow map illustrates data flow, data storage, and data output. It also displays the data flow and the processes that exist in the system that become a reference in making the user interface in system implementation.

Making the system using several applications as follows:

a. Macromedia Dreamweaver application that functions as a professional HTML editor to visually design and manage websites and web pages.

b. The ApacheFriends XAMPP application functions as a stand-alone server, which consists of the Apache HTTP Server program, MySQL database, and language translator written in the PHP programming language (KYE Aryanto et al, 2016).

c. PHP (Hypertext Preprocessor) is a scripting language that can be embedded or inserted into HTML which serves to make the website display dynamic and interactive.

d. MySQL is a multithread, and multi-user SQL database management system (DBMS) software which functions as a data storage or database server [8][9].

Figure 2 shows the start page of the Information System Accreditation Form Database of the Electrical Engineering Study Program UKI Paulus. Each user must fill in their username and password to enter the system where each user has different access rights.

![Figure 2. System login page](image)
Figure 3 displays the database structure presented in the Physical Data Model (PDM) format explaining how data is stored on a computer by presenting information such as record formats, record orderings, and access paths. The Accreditation Instrument of Monitoring Database of the Study Program UKI Paulus created using the programming language PHP and database MySQL. The PHP programming language was chosen with the aim of web-based and multi-platform. The program is made by paying attention to the UML design that has been made.

To run The Accreditation Instrument of Monitoring Database of the Study Program UKI Paulus for intranet networks by enabling the ApacheFriends XAMPP application on a server computer. By using a browser (Mozilla Firefox, Google Chrome) the system can be accessed.

Figure 3. Physical data model
through the site address http: Through the URL the application is run to play the program, namely Home. By filling in the user login correctly, it will be able to use the accreditation forms according to the appearance. Here are some program screen displays of the available menu options, as follows:

- Page menu_input_data.php were winnowed l right in Figure 4, a menu of options for selecting the link inputting data borang among others: new students, student status, ipk graduate, tracer studies, courses, teaching, other research, community services, energy experts / experts, study assignments, scientific / professional organizations, staff, academic guidance, lecturer achievements, finance.

![Menu_input_data.php page](image1)

- The menu_lihat_data.php page shown in Figure 5 is an option menu for selecting links to view the accreditation forms that correspond to the BAN-PT accreditation instrument table.

![The menu_view_data.php page](image2)
• The input_dosen.php page shown in Figure 6 is a form for filling in the lecturer identity.

![Input_dosen.php page](image)

**Figure 6. Input_dosen.php page**

• The lihat_data_dosen_tetapPS.php page shown in Figure 7 is a form for filling the permanent lecturer identity of the study program.

![lihat_data_dosen_tetapPS.php page](image)

**Figure 7. Input_dosen.php page**

Testing is done in the evaluation year / academic year 2018/2019. The results of testing with the whitebox and blackbox testing methods, obtained that the system is running according to the flow algorithm and the desired data structure and each. Table 2 shows the results of system testing. Based on Table 2, it can be concluded that all functional aspects of The Accreditation Instrument of Monitoring Database of the Study Program UKI Paulus have been functioning properly and in accordance with the system design.
Table 1. System test results

| Function       | Desired Results                                                      | Testing                                      | Test result                                                                 |
|----------------|----------------------------------------------------------------------|----------------------------------------------|----------------------------------------------------------------------------|
| Login          | Each user (user) must fill in the form username and password correctly | Fill in the correct username and password    | Users can enter the main menu page                                         |
|                |                                                                      | Fill in the wrong username and / or password | The message "Fill in your User Name and Password". Users cannot enter the main menu page |
| Fill in form data | Fill in data forms and verified and saved to the database by the system | Fill in complete data                        | Data is stored in a database                                               |
|                |                                                                      | Fill in incomplete data or Fill in the same data | Data is not stored in the database, there is a message display "data incomplete" or "data already registered" |
| Changing data  | Data changes according to the code of each data                       | Fill in or click the data code of the form to be changed | Form data changes in the database                                          |
| Wipe data      | Data is deleted according to the code of each data                    | Fill in or click the form data code to delete | Data forms are deleted in the database                                     |

Testing the level of user accessibility by measuring the level of user satisfaction with the system built. The test is performed by the administrator, dean, head of study program, faculty, administrative staff, and students involved in the process of accreditation. Respondents provide an assessment of the 5 questions given, namely:

a. Display of The Accreditation Instrument of Monitoring Database of the Study Program UKI Paulus.

b. Complete menu / form on the accreditation form database system in the UKI Paulus Electrical Engineering Study Program.

c. Speed of response and access to the database system Accreditation Forms in the UKI Paulus Electrical Engineering Study Program.

d. The accuracy of the data displayed in the Accreditation Form Database system of the UKI Paulus Electrical Engineering Study Program.

e. Accreditation Form Database System UKI Paulus Electrical Engineering Study Program meets the needs of the accreditation forms table.

Each question was rated using a scale of 5 (1 / No; 2 / Poor; 3 / Enough; 4 / Good; 5 / Very Good). From 30 respondents, the measurement results obtained from the user's accessibility level obtained by 95.52% for the scale (Good - Very Good).

4. Conclusion

This research has resulted in the UKI Paulus Electrical Engineering Study Program Accreditation Database information system, which is able to present accurate data in accordance with the needs of the BAN-PT accreditation form. Presentation of web-based data forms provides convenience and speed in filling accreditation instrument tables with user accessibility levels obtained at 95.52%.
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