Analysis and Design of Information Systems for Lecturer Performance Reports at Jambi Muhammadiyah University

Kevin Kurniawansyah[1], Noneng Marthiawati. H[2*], Anita Puspita Sari[3]
[1]Dept. of Informatics, Universitas Muhammadiyah Jambi, Indonesia
[2,3] Dept. of Information System, Universitas Muhammadiyah Jambi, Indonesia
[1]kevin.kurniawansy4h@gmail.com, [2*]marthiawati93@gmail.com, [3]anitazhafiraarsy@gmail.com

Abstract.
In a tertiary institution, the existence of lecturers is needed to carry out the tridharma activities of higher education and it is the responsibility of the lecturers themselves. Higher Education Tridharma covers Education, Research and Service. There are several problems that researchers see related to the performance of lecturers, especially for the University of Muhammadiyah Jambi Higher Education. So far, the processing of lecturer performance data at the University of Muhammadiyah Jambi is carried out conventionally, namely inputting data into Microsoft Excel by the admin on duty and additional files that have been submitted by each lecturer are simply stored on the computer without a data center or centralized data storage. . The purpose of this study is to analyze and design a lecturer performance report information system that is able to simplify business processes, use lecturer performance reports according to needs and process lecturer performance data which includes identity data, lecturer tridharma data, and other supporting data more effectively and efficiently by system prototyping method that produces a web-based lecturer performance report information system at the Muhammadiyah University of Jambi to overcome existing problems

Keywords: Analysis and Design; Information Systems; Lecturer Performance Report; Web-based

INTRODUCTION

In a higher education institution, the presence of lecturers is needed to carry out the tridharma activities of higher education and it is the responsibility of the lecturers themselves[1]. Education is the first element of the Tridharma of Higher Education. Education has an important role in the learning process [2]. The second is research, which aims to develop existing knowledge and seek new things. So from research, it is hoped that lecturers will be able to develop science and technology so that they are able to carry out their role as agents of change in the midst of society [3]. The third tridharma is community service. Forms of service carried out by lecturers to the community, for example through empowering community organizations, counseling, assisting community activities, transferring knowledge / appropriate technology, and so on[4]. Apart from the Tridharma aspect, there are several lecturers who are given additional mandates in the form of positions in the tertiary environment [5][6]

For lecturers at private tertiary institutions, the three obligations contained in the tridharma must be reported to the institution and to the Higher Education Service Institute (LLDikti) every semester[7]. Lecturer performance reporting is routinely required by every higher education institution to find out what lecturers have done in each semester [8]. In addition, some lecturers still think that lecturer performance reports have no use value or are not important so that the study program heads are only limited to encouraging them to report their semester performance results [9]. Feeling the lack of importance of the lecturer's performance report makes the study program in carrying out the study program re-accreditation process experience problems with the completeness of the files[10]. Which files are needed on the accreditation form really depends on the lecturer's performance report in each semester. So that the study program always speeds up and completes the lack of files at certain times[11]. This condition caused the quality of the report files to be sometimes assessed and criticized by assessors[12].

There are several problems that researchers see related to the performance of lecturers, especially for the University of Muhammadiyah Jambi Higher Education. So far, the processing of lecturer performance data

at the University of Muhammadiyah Jambi is carried out conventionally, namely inputting data into Microsoft Excel by the admin on duty and additional files that have been submitted by each lecturer are simply stored on the computer without a data center or centralized data storage.

The data processing process which is still carried out in the manner described above certainly has several drawbacks, including: 1) Lack of efficiency in data collection or updating because each lecturer must first collect the data and files needed individually to then submit them to the admin; 2) Data redundancy often occurs due to the absence of a data center; 3) Susceptibility to loss of data and files that have been collected because data and files are only stored without a backup on the computer which could be damaged; 4) It is prone to errors in inputting lecturer data by the admin because it is not directly controlled by the lecturer concerned; and 5) It is difficult to check the data as a whole because the data is stored without a neat and orderly structure.

To overcome these problems, researchers consider it necessary to have a lecturer performance report information system with Object-oriented development uses the object as the basic unit of systems analysis and design [13]. The purpose of this study is to analyze and design a lecturer performance report information system that is able to simplify business processes [14], use lecturer performance reports according to needs and process lecturer performance data which includes identity data, lecturer tridharma data, and other supporting data to make it more effective and efficient.

METHODS
The method used in this research is a system development method with a system prototyping methodology. The system prototype methodology consists of 4 (four) stages, namely the planning phase, each of these problems is examined by analyzing, designing, and building design prototypes. The System Prototyping Methodology can be seen in Figure 1.
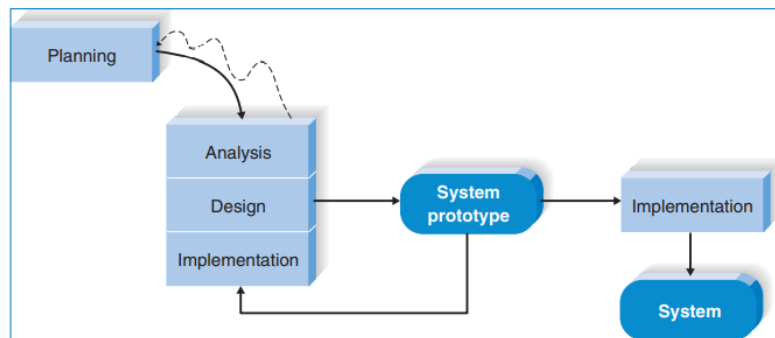

Figure 1. The System Prototyping Methodology [15]

Based on the system prototyping methodology described above, the discussion of each phase in the methodology can be described as follows:
1. Planning
    The planning phase is the fundamental process of understanding why an information system should be built and determining how the project team will build it. It has three steps: literature study, observation and interviews with related parties.
2. Analysis
    The analysis phase answers the questions of who will use the system, what the system will do, and where and when it will be used. This stage is also the stage of developing an analysis strategy, determining business requirements and using object-oriented models using UML tools, namely Usecase to define the functions of the system, Class Diagrams to show the classes in the system, Activity Diagrams to describe the flow of business processes.
3. Design
    The design phase decides how the system will operate in terms of the hardware, software, and network infrastructure that will exist, the user interface, forms, and reports that will be used and the specific programs, databases, and files that are needed and will be used.

4. System Prototyping
    System prototyping performs the analysis, design, and implementation phases concurrently in order to quickly develop a simplified version of the proposed system and give it to the users for evaluation and feedback

RESULT AND DISCUSSION
The result of the implementation of the research is a good grouping of information about an activity through the mind's effort in managing and analyzing research objects systematically. The following are the results of the implementation of the research based on the analysis and design that has been carried out.

Use Case Diagram
Use case diagrams are used to describe the functions that exist in the system being developed. In accordance with the description of the end user that has been mapped before, the description of the functions that the system can perform can be seen in the following figure :
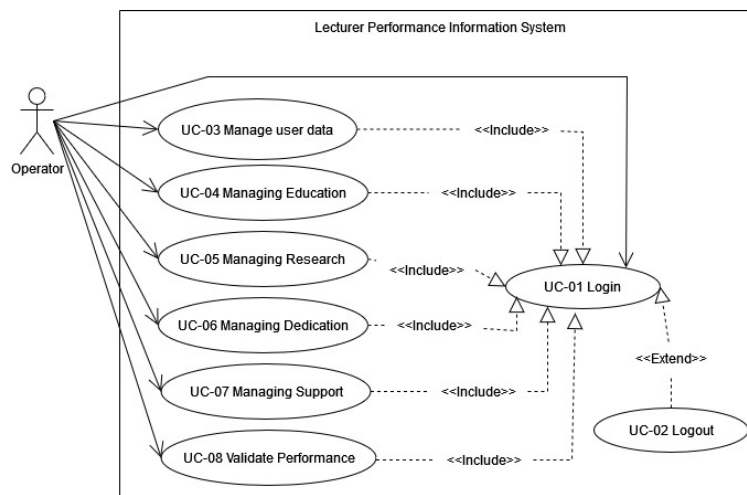
Figure 2. Operator Use Case Diagram
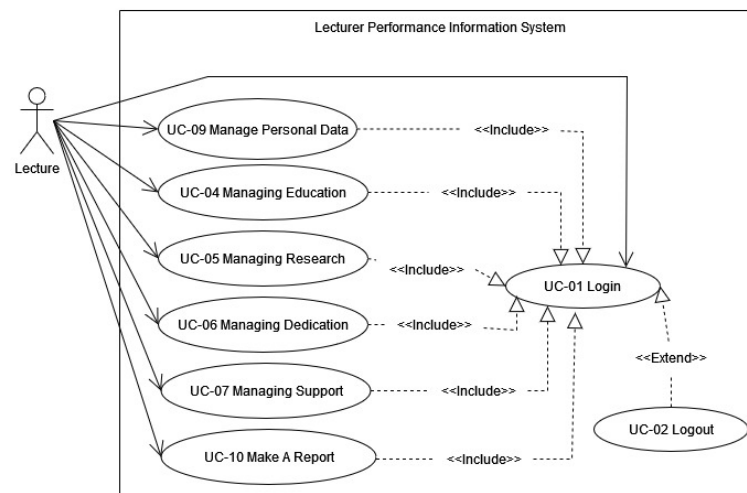
Figure 3. Lecturer Use Case Diagram

Based on the use case picture above, the business rules in the Lecturer Performance System at the Muhammadiyah University of Jambi are as follows: a.) Users in the Lecturer Performance System at Muhammadiyah Jambi University consisting of operators and lecturers b.) Operators can manage user data, education, research, service, support, performance validation and logout. c.) Lecturers can manage personal

data, education, research, service, support, make reports and logout. d.) Before processing information, users must login to the system using a username and password.

Activity Diagram
Activity diagram describes the workflow or activity of a system. The following activity diagram is needed, namely :
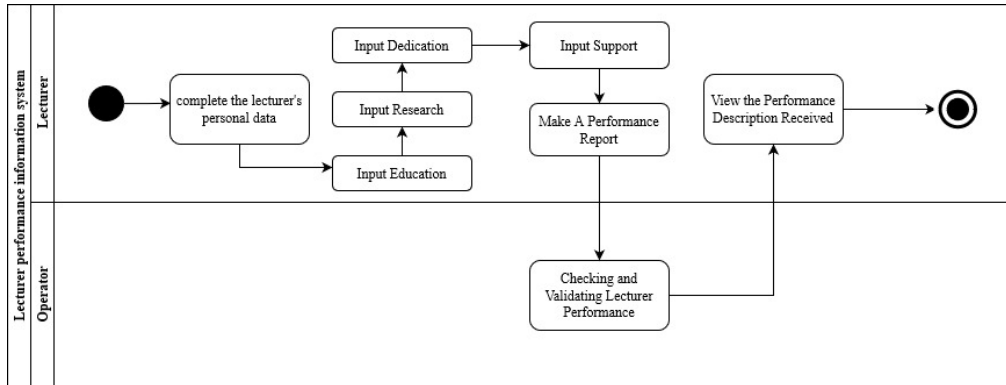
Figure 4. Activity Diagram

Based on the picture above, it states that each lecturer must correct their personal data, and are required every semester to input education, research, service and support data and make a performance report which will later be checked by the operator, which operator is LPM (Quality Assurance Agency)

Class Diagram
Class Diagram In making a system, a table specification is needed that can be used to carry out activities in data search settings. The relationship structure of the tables used can be seen in the following figure:
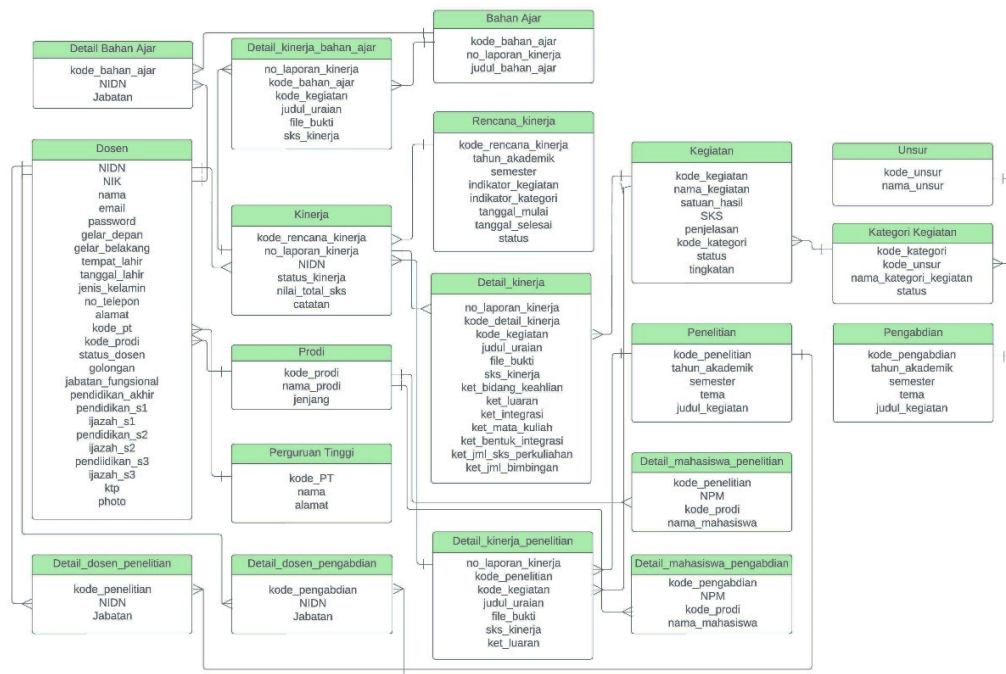
Figure 5. Class Diagram

Design Prototyping Development System
System prototyping is used to provide an overview of how the system will function if it has been compiled in a complete form. The display of the prototype Information System for Lecturer Performance Reports at the Muhammadiyah University of Jambi displays a menu in the user interface as follows :

Figure 6. Login Page

Figure 7. Admin Page
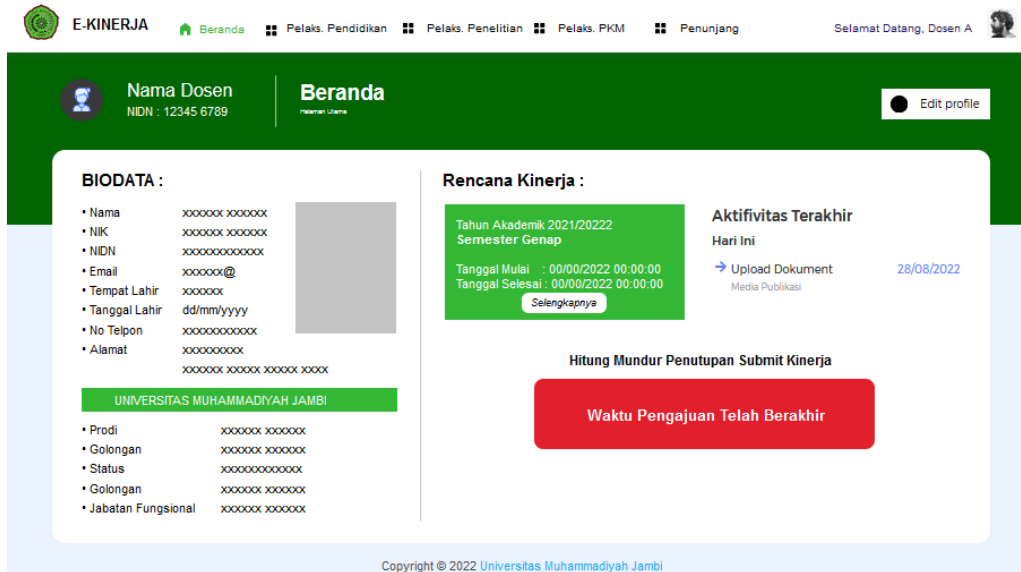

Figure 8. Lecturer Performance Validation Page
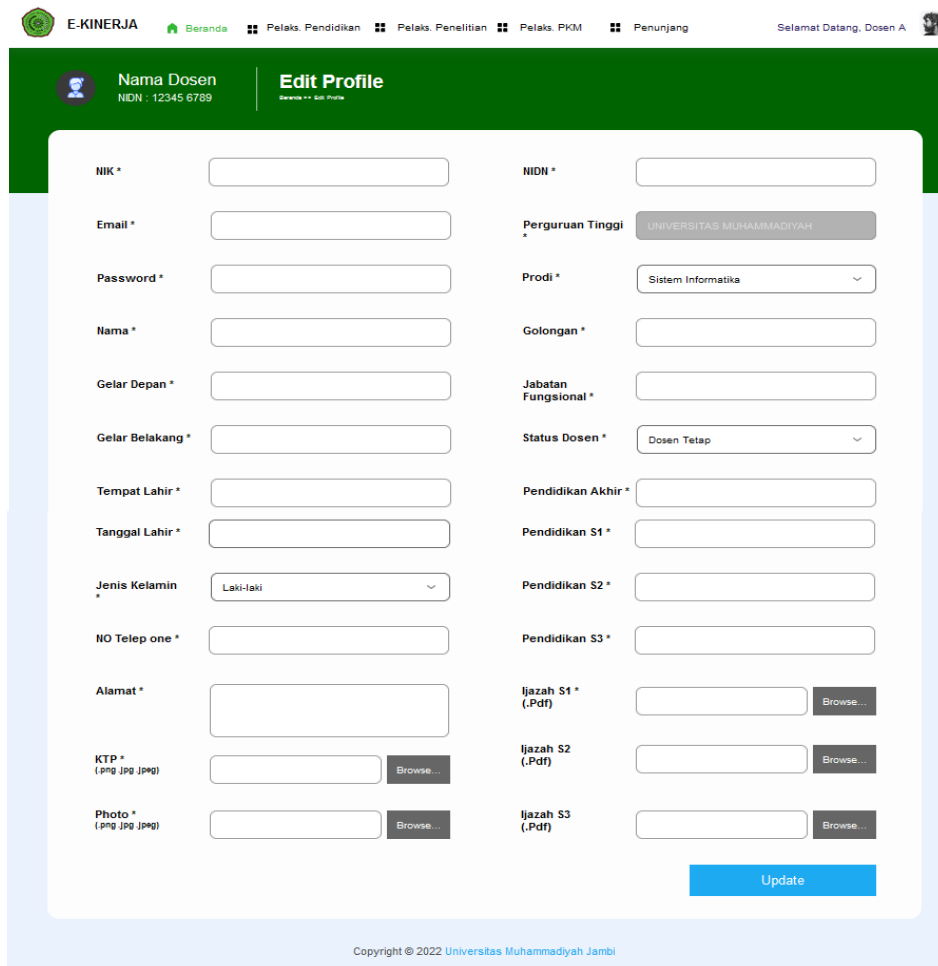
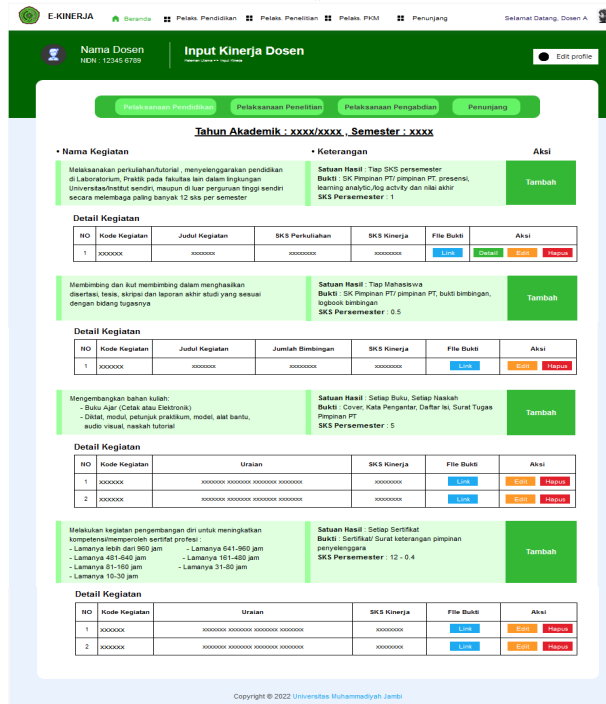Figure 9. Lecture Page

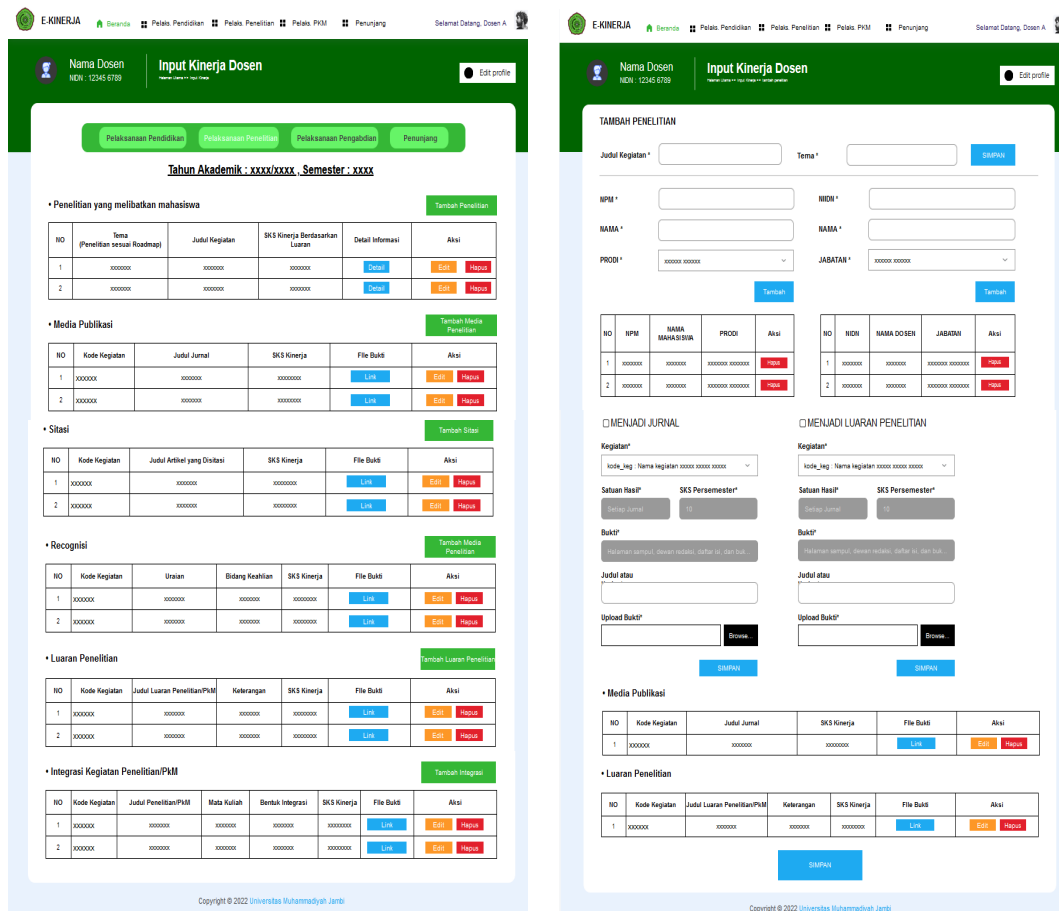Figure 10. Lecturer Profile Page

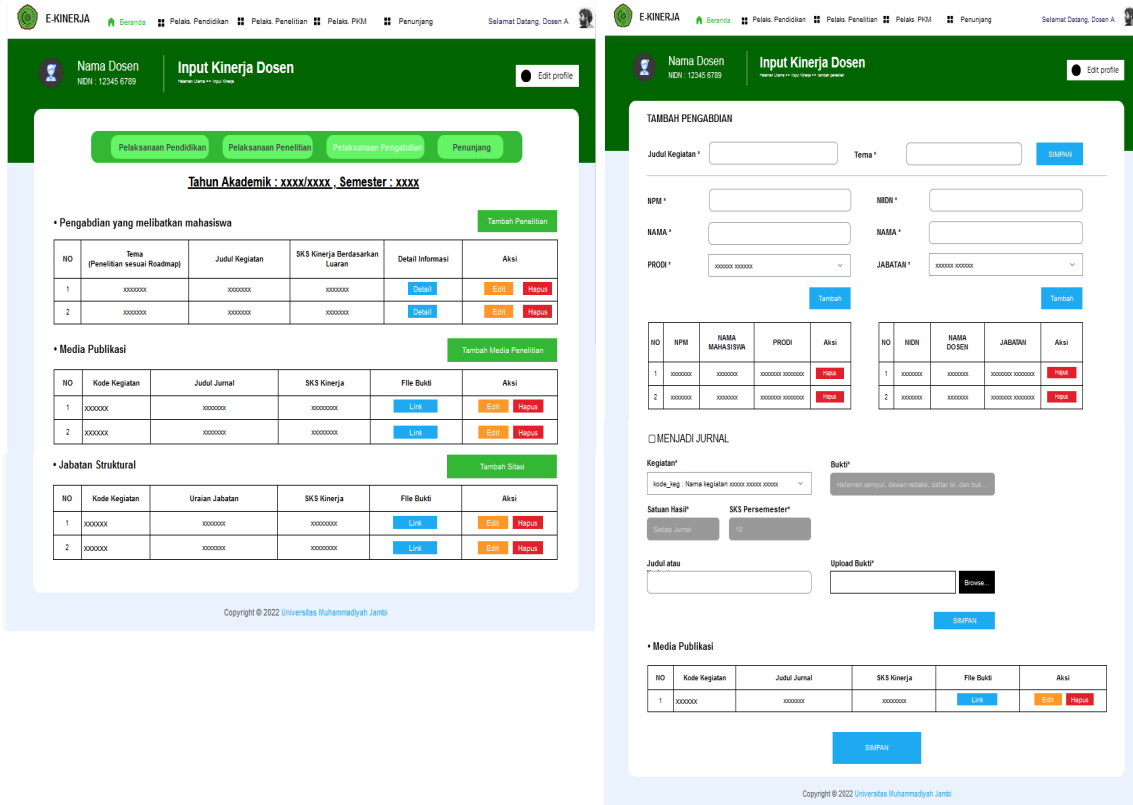Figure 11. Education Page
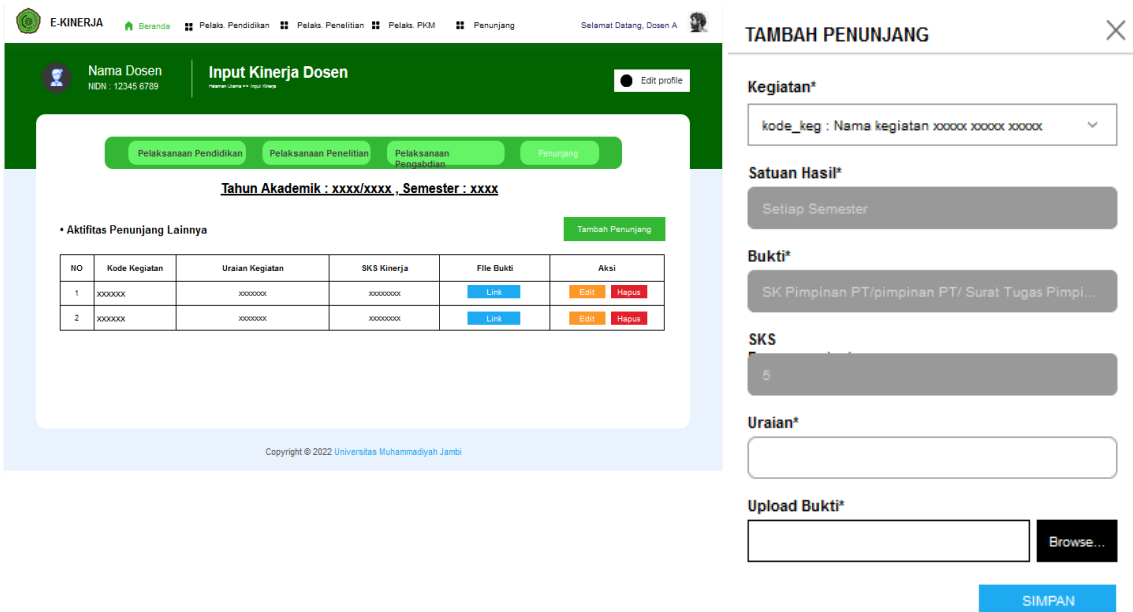

Figure 12. Research Page
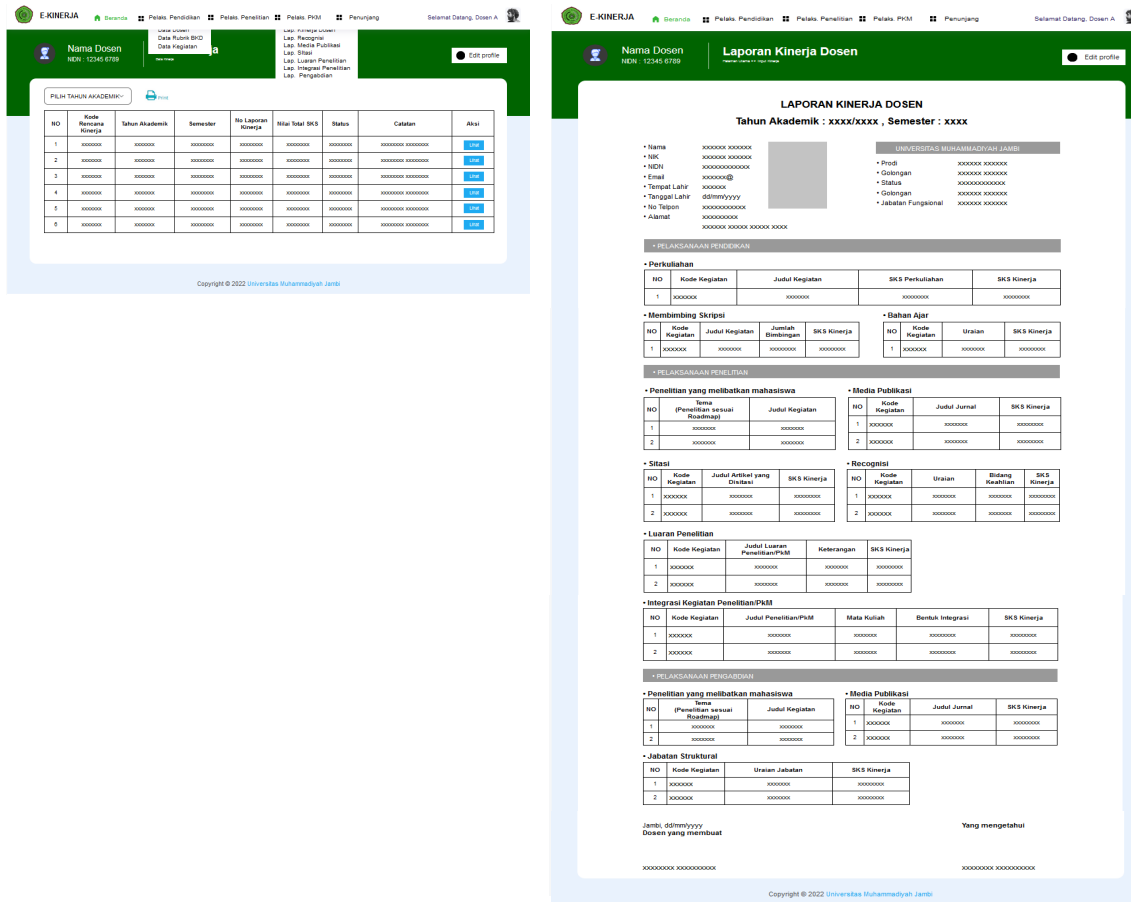
Figure 13. Devotion Page

Figure 14. Support Page

Figure 15. Performance report page

CONCLUSION

This research resulted in a performance report system for lecturers at the University of Muhammadiyah Jambi. With this system, it is able to facilitate the management of all business processes and the use of lecturer performance reports according to the needs of Jambi Muhamamdiyah University. Lecturer performance data processing which includes identity data, lecturer tridharma data, and other supporting data can be managed more effectively and efficiently. It's just that it hasn't been implemented and applied directly by the user because the system being developed has only reached the system prototyping stage. It is hoped that this system can be developed by adding a more diverse menu to support lecturer performance

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