Web-based design for lecturer performance reporting applications

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Abstract. A lecturer as an educator in a college institution obtains professional appreciation for their work through certification of lecturer who is rewarded in the form of lecturer allowance. To obtain a lecturer allowance, lecturers are required to report their academic activities. The purpose of this study is to describe the design of web-based lecturer performance reporting applications. In this study the application is modelled with UML modelling (Unified Modelling Language) that describes a system design. The object of research that used as a user of the application is a lecturer of Private Islamic Higher Education. The results of application design show that the system can work well; can process data of lecturer activities among others: education, research, community service, and supporting which then converted to semester unit value (SKS). This lecture performance reporting application is user friendly, easy access, good system security, and have a good data base.

1. Introduction
Lecturers are professional educators who are tasked with planning and implementing the learning process, assessing learning outcomes, conducting guidance and training, as well as conducting research and community service. In general, information on lecturer performance, among others: performance in education, research, community service, and other supporting performance [1]. The importance of a lecturer performance report in those four fields is to conclude whether a lecturer meets the specified performance as a lecturer responsibility.

The lecturer data performance information reporting system that available at this time is manually uses the Ms. Access® offline application. To improve the reporting of performance information, it is necessary to design a Web-based lecturer performance report to improve the information system that is currently running. Information system implementation has been proven to improve information services in universities[2-3].

Similar studies that had been conducted regarding the performance of lecturers are among others: the web-based application of lecturer performance assessment in the teaching and learning process: a case study at the Padang Institute of Technology's internal quality assurance agency [4]; development of web-based information systems for lecturer performance in an effort to improve lecturer competence at Indo Global Mandiri University [5]; Information system for lecturer performance at the Kejuangan 45 University [6]; construction of web-based applications for evaluating lecturers' performance in the process of learning and teaching at Atma Jaya University Yogyakarta [7]; and the application of info form as a data collection media for the results of the performance of e-Learning lecturers [8]. This study discusses the design of web-based lecturer performance application reports based on the lecturer requirements to obtain lecturer certification benefits.
2. Methods
Software development method that used in this research is Prototype model that is carried out by identifying system requirements [9], with stages: 1) define the overall objective and identify known needs, 2) rapid design as the basis to create a prototype, and 3) test and evaluate the prototype and then make additions and improvements to the prototype that has been made.

In this study the application was modelled using UML (Unified Modelling Language) modelling which in this case is a visual modelling language that describes a system analysis and design that will be built into visual forms [10-11]. Analytical, logical, conceptual, and operational verification method are used to reach reliability of this research [12].

3. Results and Discussion
Along with the development of the role of communication information technology that processes information to be on time and on target [13]. Information systems containing the information technology and human activities which are computerized [14], which is used to manage and support business process [15]. Information system process the data in an organized form [16], information system has good flexibility to be developed into another system [3]. In the previous research, information systems have advantages in term of: the data easy to access [17], time efficiently [18], accurate result [19], supporting decisions precisely [20], more economical [21], wide accessibility [22], improve user understanding [23], improve productivity [24], better process for data and information [25], and as organized data storage [26].

3.1 System Design
System design uses a website which is one of the media for delivering information and publications that are easily accessible from anywhere, anytime without being limited by geographical areas that can be used by companies, academic and personal institutions. Based on the content, the website can be interpreted as a collection of several pages that display information from data in the form of text, images, animation, sound and video and or a combination of all types of media, both static and dynamic pages that each page is linked to page networks (hyperlinks) [27].

3.1.1 System Architecture. Information system architecture is a mapping of information needs within an organization [9]. System architecture for the lecturer performance report application is presented in Figure 1.

![Figure 1. Architecture of Lecturer Performance Reporting Application.](image)

3.1.2 Use Case Diagram. The function of the application (that describes interaction between actors and systems) in this study are illustrated through use case diagrams, where there are three actors, namely:
(a) Lecturers, acting as users who create, manage, and print individual lecturer performance reports; (b) Assessors who assess and review reports that made by their guidance lecturers; and (c) Administrator (admin), in this case by KOPERTAIS (Islamic Higher Education Coordination) who has full access to manage all data of lecturers and assessors.

3.1.3 Class Diagram. Class diagrams describe the structure and description of classes, packages and objects and their relationships with each other. The design of the constructed class diagram of this research is presented in Figure 2.

![Class Diagram of Lecturer Performance Reporting Application](image)

**Figure 2.** Class Diagram of Lecturer Performance Reporting Application.

3.2 Database Implementation
A database is a collection of data or fact that systematically stored that can be processed or manipulated using an application program to create the important information. The database design of lecturer performance reporting application is presented in Figure 3.

3.3 User Interface of Application
a. Login page: the login page functions is to access the application using the lecturer's NIP (Employee ID number) or NIDN (National Lecturer Number) as the username and password, and access rights are used to select users as lecturers, lecturers and KOPERTAIS admin (Figure 4);
b. Lecturer Main Menu (Figure 5);
c. Lecturer Profile page (Figure 6);
d. Lecturer Identity Page (Figure 7);
e. Education Field Performance Pages (Figure 8);
f. Research Field Performance Pages (Figure 9);
g. Community Service Performance Page (Figure 10);
h. Other Support Field Performance Pages (Figure 11);
i. Print Lecturer Workload Plans (Figure 12);
j. Master Data Assessors page (Figure 13); and
k. Lecturer Data Master Page (Figure 14)
Figure 3. Design Database.

Figure 4. Login form.

Figure 5. Lecturer Dashboard.

Figure 6. Lecturer Profile Form.

Figure 7. Lecturer Identity Form.

Figure 8. Education Performance.

Figure 9. Research Performance.

Figure 10. Community Service Performance.
Figure 1. Other Lecturer Performance.

Figure 2. Print Results of Lecturer Performance Load Plan.

Figure 3. Assessor Master Data.

Figure 4. Lecturer Master Data.

Based on the results of direct system testing that conducted by assessors, the lecturer performance reporting system can work well, while direct testing by user (lecturer) shows that the user feels this application is better than the existing system.

4. Conclusions

Lecturer Performance Reporting Application can facilitate every lecturer who registered in KOPERTAIS region II for West Java and Banten in making lecturer performance reports automatically. The advantages of this system are among others: 1) facilitate lecturers to make plans for lecturer performance in accordance with the Tri Dharma (Lecturer responsibility) of Higher Education in accordance with the rules of the constitution, and 2) Facilitate the employment or human resources division of KOPERTAIS in managing data collection of lecturer performance reports teaching at higher education especially under the supervision of KOPERTAIS region II West Java and Banten.

For further development, the system can be developed to be a better lecturer performance reporting system that synchronize with Ms. Access-based lecturer performance which is still be used, and providing features for calculating lecturer performance data as directly as the lecturer rubric.

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