Indonesian Journal of Informatics Education

Making of Evaluation's Information System of Lecturer's Lecture and Major's Service Based Web

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Abstract:

The quality of education of a study program can be measured from the level of customer satisfaction with the existing service. In accordance with ISO 9001: 2008, an organization should measure and obtain information related to customers and customers. Measurements and information that can be done survey data on customer satisfaction. From this survey data, Informatics and Computer Education Study Program can follow which aspect need improvement for program quality. One way to get survey data by doing the evaluation. In the Study Program of Informatics and Computer Engineering, evaluation using application form online form. The study program does not yet have its own evaluation information system. Therefore, the purpose of this research is to produce information technology and pelaynaan web-based program in the Study Program (Prodi) Educational Engineering and Computer Informatics and to determine the level of the feasibility of information. In this study used research and development model with the first phase of the preliminary study, the second stage of product development and the last stage. At the product development stage is done by using software development model. From the stages of inputs obtained from the assessment of students on lecturers' lectures and prodi services in Education Program Informatics and Computer Engineering. The result of evaluation of lecturers' lectures and prodi services by selected students with their rena as output that can be seen by lecturer and admin. A system that can be used to help the services that have been given to the students, both in lecturers' lectures and prodi services. The results of this study, first, has created information and web-based programming services in Educational Informatics and Computer Engineering, Faculty of Teacher Training and Education, Universitas Sebelas Maret. Second, the feasibility of information and product and service development, Informatics and Computer Engineering Education Study Program, Faculty of Teacher Training and Education, Universitas Sebelas Maret conducted by expert system with percentage 89,34% and get very eligible category, from material expert gets 91,76% with category very eligible and from the students get the percentage of 83.32% with very decent category.

Keywords: Information System, Lecturer Lecture Evaluation And Prodi Service, Web

Introduction

Higher Education according to Regulation of Minister of Higher Education number 45 year 2015 is education level after secondary education covering diploma program, undergraduate program, master program, doctoral program, and professional program, and specialist program, organized by the university based on Indonesian culture.

The function of Higher Education itself as follows:

1. Developing capabilities and forming the character and civilization of the nation that dignified in order to educate the life of the nation.

2. Developing an innovative, responsive, creative, skilled, competitive and cooperative academic community through the implementation of Tridharma.

3. Developing Science and Technology (Science and Technology) by taking into account and applying the value of the Humanities.

Higher Education is an educational unit that organizes Higher Education. Universities have components involved. These components consist of non-educational personnel, educators, and learners. Educators and learners belong to the academic community. The academic community is an academic community consisting of educators (lecturers) and students (students). According to the Law of the Republic of Indonesia number 12 of 2012, lecturers are professional educators and scientists with the main task of transforming, developing and disseminating science and technology through education, research and community service. Lecturers as members of the academic community have the task of transforming their knowledge and/or technology to students by realizing the learning and learning atmosphere so that students actively develop their potentials. Students as members of the civitas academica are positioned as adults who have their own awareness in developing their potential in universities to become intellectuals, scientists, practitioners and/or professionals. In developing its potential, students are within the scope of a course or often abbreviated as study program.Program Studi adalah kesatuan kegiatan pendidikan dan pembelajaran yang memiliki kurikulum dan metode pembelajaran tertentu dalam satu jenis pendidikan akademik, pendidikan profesi dan/atau pendidikan vokasi. Selain dibidang akademik, prodi juga bertugas membantu mahasiswa dalam pengurusan penunjang akademik. Dalam pelaksanaan pendidikan, semua komponen prodi, baik tenaga kependidikan maupun sivitas akademik harus berjalan dengan baik. Agar semua komponen berjalan dengan baik, maka diperlukan sebuah langkah perbaikan terhadap kegiatan pendidikan dan pembelajaran yang ada supaya memiliki kualitas atau standar yang baik. Langkah perbaikan dalam upaya memiliki kualitas atau standar yang baik suatu program studi dapat melalui akreditasi yang diselenggarakan oleh Badan Akreditasi Nasional Perguruan Tinggi (BAN-PT) (Ali, 2009).

According to Ali (2009: 273) in obtaining accreditation of the educational and educational bodies. It is used to undertake programs and educational assessments, capacity building of educational management, enhancement of educational resources and efforts to ensure the quality of education.

The quality of education of a study program can be measured by looking at customer satisfaction with existing services. It is mentioned in ISO 9001: 2008 clause 8.2.1 that, an organization or entity shall measure and obtain information relating to customer perceptions and customer satisfaction. Measurements and information described can be a survey data on customer satisfaction.

From this survey data, PTIK Study Program can measure the aspect which needs improvement for the quality of study program to meet customer's satisfaction. In this case, the quality of the study program is about the teaching and learning process by the lecturer and the supporting administration of academic activities by the prodi (prodi service), while the customer according to ISO 9001: 2008 clause 8.2.1 owned by the Faculty of Teacher Training and Education (FKIP) Universitas Sebelas Maret is a student. Measurement and searching of information conducted to obtain customer satisfaction survey data (student) on lecturers' lectures and prodi service one of them can be done by doing an evaluation. Evaluation data will be a matter of consideration in decision-making in order to take corrective action for the future.

In addition to evaluating the lecturers' lecture, evaluation of the prodi service needs to be evaluated. Evaluation of study program is done to support the implementation of good teaching. Evaluation of study service is useful to know the level of service provided by the study program to support the existing teaching on the students. If the service is good then it needs to be maintained, but if the service is not good then it needs improvement to be better. In the evaluation of lecturers lectures and prodi services conducted by using a questionnaire containing the questions that must be filled by students. The use of questionnaires

also vary, the questionnaire can take the form of a shared sheet or in the form of applications that have been provided.

Currently Prodi PTIK, in evaluating lecturers' lectures and prodi services using online application form maker that has been provided by Google Form. The results presented in the form of pie chart with calculations that have been processed. Data collection on online application form creator can not be used repeatedly. If used repeatedly then the data obtained now merges with the data obtained before, so the user must select manually. If the user wants to retrieve the latest data, the user must download all the data in Excel file first, then the user can retrieve the data as desired. In the presentation of data, the user can not present as he wishes, because the presentation of data directly in the form of pie chart and bar chart that has been processed. If the user wants to process it, the user is required to download the Excel file first. In addition, in certain periods, the form provided requires permission to access it. From some of the explanations, the Study Program of PTIK FKIP UNS requires an application that can be used to facilitate the evaluation of lecturers' teaching and product services and can provide output according to the function desired by the study program.

Prodi PTIK itself does not have a special application that can be used for lecturer evaluation and lecture service. For that PTIK Prodi require a web-based information system that can be used to evaluate lecturers' lectures and prodi services. By using the web-based information system, both students, lecturers, and prodi can easily access it. Such web-based information system can be accessed anytime and anywhere. So with the information system can facilitate the Study Program of PTIK in the evaluation of lecturers' lectures and prodi services.

The development of an evaluation system for improving the quality of learning has been widely developed. One of the research conducted by Certiasih, et al (2015), which in his research explained that the development of web-based information system useful for lecturer assessment as an effort to improve the quality of learning.

From the background explanation above, this research is conducted for (1) creation of lecture evaluation information system of lecturers and web-based prodi service in Study Program of PTIK FKIP UNS and (2) to know the level of eligibility of information system of lecturer lecture evaluation and web-based prodi service and service study program at PTIK FKIP UNS.

Literature

Rochman, A., et al. (2015) conducting research on lecturer performance information system and the result of the research mentioned that the design of lecturer performance information system which is effective in giving lecturer and efficient evaluation for academic side that is by building a computerized system in which there has been a questionnaire form which will be filled by students. Lecturer's Performance Assessment is conducted by students by completing the Lecturer Assessment Lecture Card which is completed after each final exams according to the subject and the lecturer. Lecturer Performance Assessment only through questionnaire has not been effective because not all students always follow lectures, and students do not know the character of the lecturer in teaching, so the assessment becomes not maximal. To design an effective lecturer performance information system for students in providing an assessment of lecturers and efficient for the academic in making lecturer appraisal performance reports that are by building a computerized system in which has there is a questionnaire form that will be filled by the students and there is also a performance appraisal form as a lecturer performance appraiser, which will ultimately be a lecturer performance report, so the paper is only used for reports only.

While the research results from Mahmudi, A. A. (2015) information system performance appraisal of lecturers and employees can be used in monitoring and evaluation, effectively and efficiently. The system makes it easier for students, lecturers, and employees to complete questionnaires. The completed questionnaire will be displayed in the assessment report. The results of the evaluation can be used as a management platform to provide rewards for lecturers and employees every semester.

Method

In making information system of lecturer's evaluation and web-based study program in PTIK FKIP UNS Study Program, using research and development method according to Sukmadinata (Hamdi and Baharuddin, 2014: 15) that is preliminary study, product development, and product testing. In the product development phase, a system development which uses Model Waterfall software development model is

developed. Waterfall model described by Pressman (2001: 28) starting from the analysis, modeling/design, construction/coding, testing, and maintenance.

At the Waterfall Model stage described by Pressman, only four stages are used in making this information system. Maintenance stage is not done because the maintenance phase takes no time. Maintenance stage requires time to use on users in the long run and generally, this stage will continue to be improved in accordance with the needs of users and their performance.

Some steps in the Waterfall Model as follows:

1. Analysis

    Stage analysis is used to obtain information needs in the manufacture of software. This stage as the initial stage required before doing the design phase and the next stage.

2. Design

    The design stage is a multi-step step that focuses on software design such as data structure, software architecture, User Interface and procedural details.

3. Encoding

    The coding phase is done to convert the design into a form of language that the machine can understand.

4. Testing

    This stage is done by two processes, namely internal logical and external functional testing process. The testing process focuses on the logical internal of the software, ensuring that all statements (algorithms) have been tested. Tests focus on the functional external of the software, ensuring that the defined inputs produce actual results in accordance with the required results and these tests are used to uncover software errors.

Data collection techniques used interviews, literature studies and questionnaires or questionnaires. Questionnaires or questionnaires are structured on the software quality aspect according to McCall and ISO 9126. In the system, experts are given the quality software questionnaire based on McCall, namely Correctness, Reliability, Integrity, Testability, and Reusability. While the material experts and students, namely correctness, reliability, usability, functionally and testability. The combination of quality aspects of software McCall and ISO 9126 is done because the quality aspect of McCall is more likely to software, while ISO 9126 is more likely to users who use the software. Assessment of the questionnaire using a scale of 5 scaled according to the Likert Scale (Eko, 2012). Scores according to Likert Scale can be seen in Table 1.

Tabel 1. Skala Pengukuran

Skor	Kriteria
5	Very Good
4	Good
3	Not Good
2	Not Good
1	Very Not Good

Data analysis using qualitative and quantitative. Qualitative form of criticism and suggestion by expert systems and material experts. Quantitative data using the technique of calculating the score as a percentage. The description of criteria according to Riduwan can be seen in Table 2. Calculations:

$$Persentase\ hasil\ (\%) = \frac{jumlah\ skor\ perolehan}{jumlah\ skor\ maksimal} X\ 100$$

(Source: Riduwan, 2013)

Table 2. Persentase Kriteria Penilaian (Riduwan, 2013)

Kriteria	Persentase
Very Decent	81% - 100%
Well worth it	61% - 80%
Less Eligible	41% - 60%
Not feasible	21% - 40%
Very Inappropriate	0% - 20%

Result and Discussion

Result

Introduction Study

A preliminary study conducted in the form of reviewing the theory and observing the existing activities. From the preliminary study results obtained that, the Study Program of Informatics and Computer Engineering Education using online application form maker is Google Form. From the use of Google Form, the data obtained is still reprocessed by the evaluation coordinator in order to get the desired results. Therefore, Informatics and Computer Engineering Education Study Program need an information system which can help in making the evaluation. And the results of the evaluation can be as according to the desired by the study program.

Product Development

Product development is done to develop an existing product or new product. Development in this research will result in an information system of lecturer lecture evaluation and service of study program which not yet owned by Informatics and Computer Education Study Program. In its development, used Waterfall software model.

1. Analysis
   a. Material Analysis

   The phase of material analysis conducted to determine the content of material from evaluation developed for Prodi PTIK FKIP UNS. The contents of the materials are based on the quality guidelines set by FKIP UNS through monitoring and measuring customer perceptions to ensure the services meet the needs of the customers (students). To that end, FKIP UNS implements the ISO 9001: 2008 quality management system clause 8.2.1 as a quality manual.

   b. Needs Analysis
   1. Functional Needs Analysis

   The analysis of functional needs in making information system of lecturer lecture evaluation and service of study program of PTIK FKIP UNS based on an interview to evaluation coordinator of Prodi PTIK FKIP UNS, as follows:

   - The required information system of evaluation of lecturer lecture and service of the study program in PTIK FKIP UNS Study Program.
   - An evaluation system is required that can show evaluation data from year to year.
   - The system created requires several users, namely: admin, faculty, and students.
   - User admin can make questionnaire, perform (read) questionnaire, update (update) questionnaire, and deletion (delete) questionnaire.
   - Admin can perform data processing lecturers and courses. Such as adding, displaying, modifying and deleting data.
   - Admin can perform appear, change and delete student data.
   - Admin can view and print the results of evaluation of lecturers' lectures and service studies.

- Admin can backup and restore data.
- Admin may accept or reject incoming student account.
- Students can do the assessment by first registering (register) for those who have not registered.
- Students can conduct the evaluation of lecturers' lectures and prodi services.
- The lecturer can see the results of evaluation of the lectures and print them.
- Lecturers can search for evaluation results in the previous period.

2. Non-Functional Needs Analysis

Non-functional requirement analysis is done to find out system design requirement. This analysis is useful in order that the system created can be used according to its function. There is two analyzes in non-functional requirements analysis, ie hardware (hardware) and software (software) analysis. The hardware analysis (hardware) and software (software) system for PC / laptop/smartphone used when doing research from the user side as follows:

- Minimum 2GB RAM for laptop, minimum 1 GB RAM for Smartphone.
- Intel Dual-Core Processor / AMD Quad-Core for Laptops. Quad-Core / Octa-Core processor for smartphones.
- Windows Seven Operating System, Windows Eight for a laptop. Operating System Kitkat, Lolipop, and MIUI for smartphones.
- Have a browser (search software), for example, Mozzila, Google Chrome, and Opera.

The hardware (hardware) and software analysis (software) system used from the server side as follows:

- RAM at least 4 GB.
- XAMPP for Windows version 1.7.3.
- Apache version 2.2.14.
- MySQL client version 5.1.41.
- PHP version 5.3.1.

2. Design

Design stage is done by making Flowchart, Data Flow Diagram (DFD) and Entity Relational Diagram (ERD) which can be seen in Figure 1 and Figure 2.
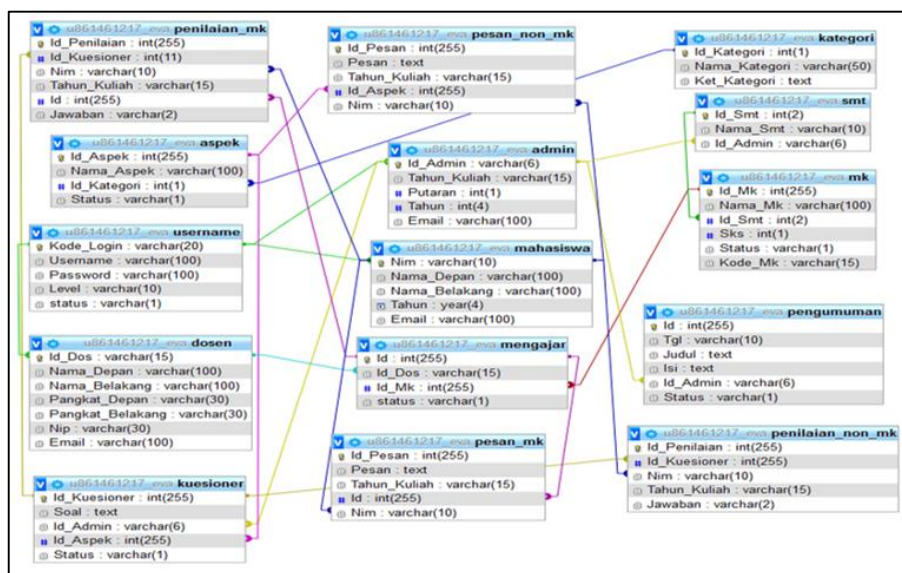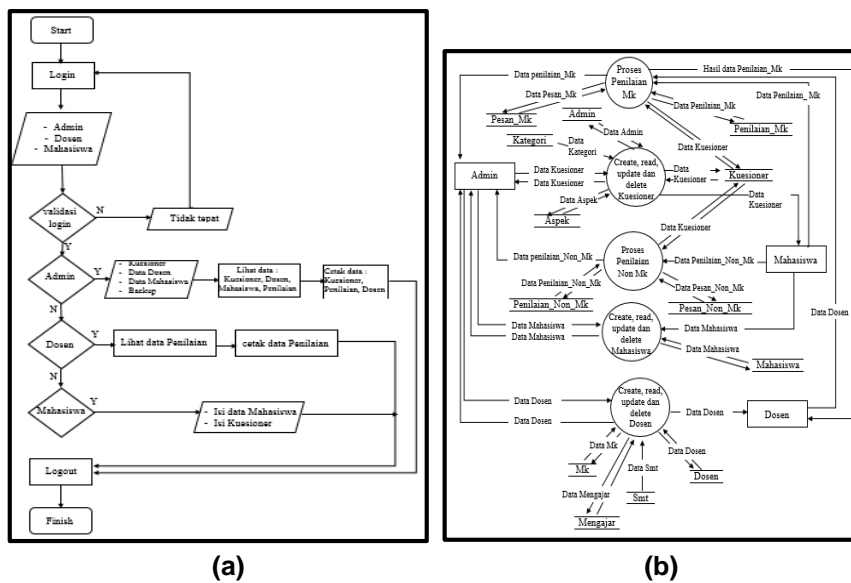

Figure 1. ERD

(a)   **(b)**

Figure 2. Flowchart (a) dan DFD (b)

a. Encoding

In the coding phase is done by using PHP language with the use of MySQL DBMS.

(a)   (b)

(c)

Gambar 3. User Interface Dosen (a), Admin (b) dan Mahasiswa (c)

b. Testing

At this stage, the researchers conducted a test of the system. Testing is done to know the system running in accordance with the needs or not. The test is done on the researcher's localhost. Then if the system deemed to have run in accordance with the needs then done hosting. The system is also carried out the tested so that no errors occur in the system functions created.

Product Testing

After the testing phase of the system function then tested to the experts (system experts and media experts) and students. The recommended system experts are Mr. Aris Budianto, S. T., M. Eng. The recommended material experts are Mr. Endar Suprih Wihidayat, S. T., M. Eng. The number of students taken data is thirty (30) students of Education Program of Informatics and Computer Engineering.

Discussion

Tests aimed at experts and students using either a laptop or smartphone on the input and output process can run well without any errors. But in the display results every browser a little different. The browser used is Mozilla Firefox, Opera, and Google Chrome. In the notification view (pop-up dialog box appears as a sign of success or failure of a process) and the printed PDF view of each browser is different.

Making the system using a minimum of 4GB of RAM with XAMPP Software version 1.7.3 which is used to enable Apache and MySQL. Apache is required on the server side script of PHP to run and test the system created. The minimal Apache version used is version 2.2.14 while the minimal version of MySQL that is used is version 5.1.41. In the use of programming languages, the system in this study using PHP minimal version 5.3.1. The software (software) and hardware (hardware) described are of minimal use in the manufacture of this evaluation information system. Minimal use is used by researchers when making the system in localhost (own computer). Tests performed on localhost by the researcher went well without any errors. On localhost testing is done, the researcher is hosting the hosting provider, the researcher uses IdHostinger to host the information system that has been running on localhost so that later can be accessed by many people (not just the researcher's own computer). In the hosting used, PHP version on hosting using PHP version 7.1.8, while the database using MariaDB version 10.1.25. The results of testing researchers using the hosting can run well, although the PHP version on localhost is different from the version of PHP hosting. On the database processing localhost using MySQL 5.1.41 version while on the hosting using MariaDB version 10.1.25. The difference is not a problem in the course of the system because MariaDB is a better development of MySQL. MariaDB Basic is MySQL. MariaDB also supports the use of programming languages in web development such as PHP.

The test results of system experts using quality aspects can be seen in Table 3, material experts can be seen in Table 4 and on the students can be seen in Table 5. The results of the test are then converted into Riduwan assessment criteria based on per indicator. So as to get the overall total that can be seen in Table 6, Table 7 and Table 8.

Tabel 3. Hasil Kategori Pengujian Ahli Sistem

Indikator	Persentase	Kriteria
Correctness	90%	Sangat Layak
Reliability	86,67%	Sangat Layak
Integrity	100%	Sangat Layak
Testability	90%	Sangat Layak
Reusability	80%	Sangat Layak
Total Keseluruhan	89,34%	Sangat Layak

The test results of the system expert (See Table 3) for the correctness indicator obtain a 90% with very reasonable criteria. The reliability indicator obtained a percentage of 86.67% with very reasonable criteria. The integrity indicator gets a 100% with very reasonable criteria. The testability indicator gets a 90% with very reasonable criteria. The last indicator, reusability earned 80% with very reasonable criteria. The overall total of these indicators has obtained a percentage of 89.34% with very reasonable criteria.

Tabel 4. Hasil Kategori Pengujian Ahli Materi

Indikator	Persentase	Kriteria
Correctness	95%	Sangat Layak
Reliability	88,57%	Sangat Layak
Usability	88,57%	Sangat Layak
Functionally	86,67%	Sangat Layak
Testability	100%	Sangat Layak
Total Keseluruhan	91,76%	Sangat Layak

Judging from Table 4 the indicators of correctness earn a percentage of 95% with very reasonable criteria. The reliability indicator obtained a percentage of 88.57% with very reasonable criteria. The usability indicator obtained a percentage of 88.57% with very reasonable criteria. The indicator functionally earns a percentage of 86.67% with very reasonable criteria. The testability indicator obtained a percentage of 100% with very feasible criteria. The total of these indicators is a percentage of 91.76% with very reasonable criteria.

Tabel 5. Hasil Kategori Pengujian Mahasiswa

Indikator	Persentase	Kriteria
Correctness	85,78%	Sangat Layak
Reliability	81,83%	Sangat Layak
Usability	83,33%	Sangat Layak
Functionally	87%	Sangat Layak
Testability	78,67%	Layak
Total Keseluruhan	83,32%	Sangat Layak

The results of testing the system to the student, for the correctness indicator obtained a percentage of 85.78% with very reasonable criteria. The reliability indicator obtained a percentage of 81.83% with very reasonable criteria. The usability indicator obtained a percentage of 83.33% with very reasonable criteria. Indicators functionally earn a percentage of 87% with very reasonable criteria. The testability indicator obtained a percentage of 78.67% with eligible criteria. The total of these indicators has obtained a percentage of 83.32% with very reasonable criteria.

Based on the overall total results on system testing by system experts showed an average of 89.34%, by material experts showed an average of 91.76% and by students showed an average of 83.32%. The average of the final results of the three tests is 88.14%, so it can be said that the making of lecturers evaluation information system and web-based study program in the PTIK FKIP UNS Study Program is categorized as very feasible and can be used to assist the evaluation of lecturers' Study Program of Informatics and Computer Engineering Education.

Regarding the final product that has been made has advantages and disadvantages. The advantages and disadvantages are described as follows:

1. **Advantages**
   a. The system is made useful for evaluating lecturers' lectures and prodi services.
   b. The availability of a usage flow image that can facilitate system usage.
   c. There is a comparison chart of lecturers' lectures and prodi services on the admin page from year to year.
   d. There is a limit of credits to limit the filling of course evaluation.
   e. Can see in detail the assessment done by the students.
   f. There is a color indicator on lecturer lecture assessment results, as a distinguishing lecturer score above 3 and below three.
   g. There is export data in the form of excel and print data in the form of pdf.
   h. The availability of restore data on the system created.

2. **Deficiency**
    a. User not yet complete. Like the user of Prodi chairman, user coordinator, user who verifies the account and so on.
    b. Export data is only available in excel format.
    c. Web display on the smartphone is different from the look on the laptop / PC.
    d. If the data collected amounts to thousands of data, the access speed of the system is unknown.
    e. Student database has not been connected with student database from UNS so that student do prior registration before doing evaluation.
    f. Students may take courses that are not courses.

Conclusion and Suggestion

Conclusion

Based on preliminary study results, product development, system testing and discussion, it can be concluded as follows
1. Has created information system of lecturer lecture evaluation and web-based prodi service in Prodi PTIK FKIP UNS with quality guidance based on ISO 9001: 2008 clause 8.2.1.
2. The feasibility of evaluation information system of lecturers lecture and web-based study program in Study Program of PTIK FKIP UNS done by expert system with percentage 89,34% and got very decent category. From material expert percentage of 91,76% with very decent category and from student percentage 83,32% with very decent category.

Suggestion

Based on preliminary study results, product development, system testing and discussion, it can be concluded as follows:
1. Has created information system of lecturer lecture evaluation and web-based prodi service in Prodi PTIK FKIP UNS with quality guidance based on ISO 9001: 2008 clause 8.2.1.
2. The feasibility of evaluation information system of lecturers lecture and web-based study program in Study Program of PTIK FKIP UNS done by an expert system with percentage 89,34% and got a very decent category. From the material expert percentage of 91,76% with very decent category and from student percentage 83,32% with a very decent category.

References

Ali, M. (Ed) (2007). *Ilmu dan Aplikasi Pendidikan. Bagian 1 Ilmu Pendidikan Teoritis.* Jakarta: PT. Imperial Bhakti Utama.

BAN-PT. (2014). *Direktori Hasil Akreditasi Program Studi*. Diperoleh pada 21 Agustus 2017, dari https://banpt.or.id/direktori/prodi/pencarian_prodi.

Hamdi, A. S. dan Baharuddin, E. (2014). Metode Penelitian Kuantitatif Aplikasi dalam Pendidikan. Yogyakarta: Deepublish.

Mahmudi, A. A. (2015). Sistem Informasi Penilaian Kinerja Dosen dan Karyawan Berbasis *Web.* Surya Informatika. *Surya Informatika*, 1(1), 55-60.

Presiden Republik Indonesia. (2012). *Undang-undang Republik Indonesia Nomor 12 Tahun 2012 tentang Pendidikan Tinggi.* Jakarta: Presiden Republik Indonesia.

Pressman, R. S. (2001). *Software Engineering: A Practitioner's Approach, fifth Edition.* New York: McGraw-Hill.

Pressman, R. S. (2010). *Software Engineering: A Practitioner's Approach, Seventh Edition.* New York: McGraw-Hill.

Riduwan. (2009 & 2013). Skala Pengukuran Variabel-variabel Penelitian. Bandung: CV. Alfabeta.

Rochman, A., Fuad, H., & Muhibin, E. (2015). Sistem Informasi Kinerja Dosen pada Universitas Kejuangan '45. *Jurnal SISPOTEK Global,* 5(1), 43-48.