Implementation of Learning Management System in Information Technologi Education UNISRI Surakarta

Tigus Juni Betri
Information Education Technology, University of Slamet Riyadi Surakarta
juni.betry@gmail.com

Abstract: The solutions in current learning system is Electronic Learning or well known with E-Learning. Implementation of Electronic-Based Learning can be more varied and at the same time can eliminate the saturation of learners. In Education perception, aplication for E-Learning usually called with Learning Management System (LMS). This software includes material, quizzes , courses learning method and all of them are summarized in one application. Implementation of LMS in University of Slamet Riyadi Surakarta not running maximally. The solution for the problem is better to design LMS and it must be implemented for student. The new appliaction of LMS had been created and can be implemented for the students as end user.The subject of this research is the students who are taking class in Information Technology Education. They will take some courses with this electronic learning method that can be opened by online Meanwhile questioneer and testing are applied to gain the data. The questioneer were done toward students after they are taking courses with the application. Testing was conducted directly in learning process after they are given questioneer to be fullfilled. The data that collected then analyzed using experimental quantitative research. After the data accurately collected, then analyzed using Partial Least Square to measure reception level by the students as end user.The results showed, based on the questionnaire and testing to end users can be concluded that the application LMS offered can be accepted for the students. This is shown from the statistical results of the analysis of the influence between variables that are formulated. Hypothesis of influence between variables most or dominant produce application acceptable

***Keywords*:** *Application, E-Learning, End User, Information Technology, LMS*

1. INTRODUCTION

E-Learning is one of the learning method that is currently being developed by using the computer as a learning medium, besides giving an innovation that has a very big contribution to the change of teaching and learning process, the learning process is no longer just listening the material description from the lecturer but the material can be visualized in more dynamic and interactive formats and forms such as files, videos. music, animation, and more [Wahono, 2007]. In E-Learning learning education has changed the way of learning view that is: from training to appearance, from room to where and anytime, from paper to "on line", from physical facility to network facility, and from time to time cycle to real time [Ali Magai, 2009].

E-Learning concept consists of management, pedagogic, interface design, technology and ressources.

Learning Management System is an application that automates and virtualizes of teaching and learning process electronically [Iyan,2008]. Learning Management System can contain materials packaged in multimedia (text, animation, video, sound), provided as a supplement and enrichment for the development of learner competencies. Learning Management System offers innovative learning system that covers in the field of information technology, especially those based on virtual online through E-Learning , multimedia and video conferencing.

Learning Management System as web-based learning is developed dynamically (dinamic E-Learning) [Iyan, 2008]. Common functions that should be owned by Learning Management System (LMS) include: (1) uploading and sharing material; (2) Forum and Chatt; (3) Quizzes and Surveys; (4) Gathering and Reviewing Assighment; (5) Recording Grades

In the implementation of learning, UNISRI has a University academic system or website that can be accessed at www.unisri.ac.id. However, in the application there is no E-learning application that is completely integrated with the needs of students and lecturers to improve the quality of learning. Whereas in the curriculum of one study program that is Information Technology Education, it was formulated that one of the characteristics or objectives of the study program.

As for the formulation of problems in in this article is 'How the prototype of this Learning Management System application that created by the researcher can be accepted as a design that can be developed into a recommendation at Slamet Riyadi University?'

2. RESEARCH METHOD

The research flow adopts on Borg & Gall [10] with modifications. Research model Borg% Gall modified into 7 steps, namely; (1) data collection; (2) Planning; (3) early product development; (4) implementation; (5) Trial; (6) Evaluation; (7) Validation. The process of composing the design of Learning Management System application architecture outline consists of system identification and implementation into the application in the form of Prototype. The system identification step in concept adapts to the waterfall method at the stage of requirement analysis, system design and data design. Needs analysis is done to find out what business processes are needed and should be incorporated into the system. The system design describes the system picture developed by adjusting the identification of the needs of the needs analysis. While the design of the data is the database design contained in the system. Step needs analysis consists of 4 activities, namely identify, understand, analyze and report. The step is a step in the first stage after that the user needs validation process. The second step is system design done with the traditional approach. The traditional approach is done because looking from the perspective of functional perspective

is different from the approach of UML because it is object based [Satzinger, 2002].

Implementation of Prototype is done based on system identification report as reference of application development. The method used is to map each system needs in accordance with its function into the initial application called prototype.

Data collection is done by collecting primary data that is questionnaire to end user testing prototype, interview of Kaprodi Pendidikan Teknologi Informasi and expert. In addition, the collection method is also done by observation and also secondary data collection using literature study method. In the data analysis process is done by analyzing the needs of lecturers and students to know what the target students. In addition to analyzing the needs are also carried out an application user analysis. The shape of this section is the identification of the problem. The results are discussed applying for approval of the expert. Experts in this field of IT field of experts and experts in the field of curriculum. Analysis of statistical data used for the validation of data results of questionnaires distributed to the end user Partial Least Square method.

this paper goals only discuss about the result of prototype implementation that already made into the university

3. DISCUSSION

System requirement analysis is likened to planning component part with the purpose of identifying and evaluating the problems, opportunities, barriers that occur and the expected needs so that it can be proposed to be an information system intact. Data needs analysis is used to map data requirements. On the process data collection system and data needs, the outline can be inferred needs include; (1) registration; (2) learning; (3) assessment, (4) student data; (5) data lecturer; (6) course data, and (7) assessment data.

3.1 System

In this diagram, the entities involved are students and lecturers because of the students and lecturers are subjects who use the system. Also Administrator, however

the administrator is also a lecturer so that the entity's position is the same. Lecturer related with systems for manipulating accounts, providing materials, giving quizzes / assignments or provide an assessment. While students use the system to manipulates profile as well as carrying out the student learning process itself. For example, doing tasks / quizzes, downloading materials and to see the value of the course.

3.2. Data

In accordance with the ERD design then the data requirements in this system; Table Siswa; Table Pengeumuman; Table materi; Table Tugas; table Nilai;tables Kuis; Table login; Table log login; Table dosen; The table kelas is where class data stored on campus; Table materi kelas; table komen; ; table kelas siswa; Table makul; Table makul kelas and Table makul ajar.

3.3 Prototype

The process of making prototype e-learning application is made based on the reference design documents that have been made. With reference to 3 kinds of entities related to the system ie admin, faculty and students. Prototype created using PHP and Mysql database. Here's a picture of examples of prototype display

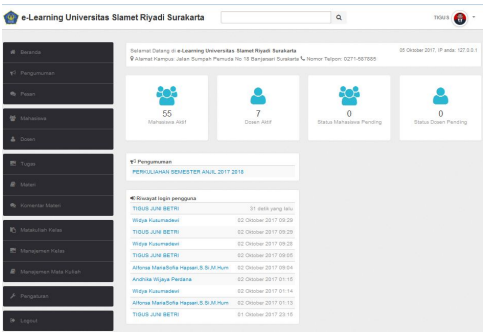

Figure 1. Prototype Page

4. RESEARCH FINDING

Evaluation is used to find out how precisely a measuring instrument capable of performing its duties in accordance with its function. Validation test means that the instrument used can measure what you want to measure. Usually used by calculating the correlation between the score of the instrument item and the total score [Sugiyono,2004]. This study uses HOT-fit evaluation model (Human, Organization, Technology). This model involves 3 main factors namely User, Organization, and Technology. This research shows that the relationship between Human, Organization, and Technology variables has a strong enough and positive relationships that affect each other and the three have a strong and direct relationship to the Net Benefit of the system. This model was put forward by Yusof M.M., Paul RJ and Stregioulas, L. K (2006). The rationale for this model comes from the evaluation model of DeLone McLean's information system (2003).

These three factors relate to the seven dimensions of its derivative components, namely System Quality, Information Quality, Service Quality, System Use, User Satisfaction, Organization Structure organization) and Net Benefit. The factors of this evaluation model are then formulated into hypotheses of influence analysis which then later calculated with Partial Least Square model using SMART PLS software. To find the hypothesis of influence between variables, first formulated what factors are related. These dimensions affect one another. In Partial Least Square, these derived factors or variables are called exogenous variables and endogenous variables. Exogenous variables are variables that are not predicted by other variables contained in the model. The exogenous construct is the construct directed by the line with one end of the arrow While the endogenous variable is the variable that is the factors predicted by one or more constructs. Based on this, it can be concluded;

a. Exogenous variables: system quality, information quality, service quality, organizational structure

b. Endogenous variables: system use, user satisfaction, Net Benefit.

The relationship is formulated into the HOT-fit model ,

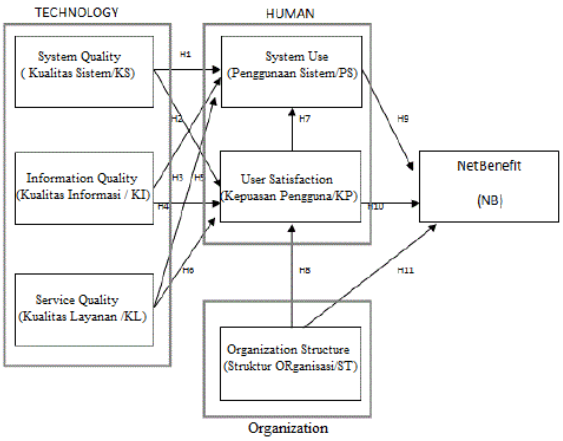

Figure 2. Hot Fit Model Implementation

Respondents are divided into 2 lecturer respondents and students (end users as many as 60 people). The variables of lecturer and student respondents were processed using SMART PLS software

Tabulation of data there are 2, namely lecturer and student respondents. Data of lecturer and student respondents were analyzed using SMARTPLS. The step to solve the equation model with this path approach is to calculate the outer model and inner model consisting of Convergent Validity; Discriminant Validity, Average (ave); Composite Reliability, Croncbach Alpha; as well as the path coefficient and t-value.

Convergent validity requires that measuring devices accurately measure the constructs in question. Convergent validity is equal to outer loading / loading factor whose value is said to be high when more than 0.7.Here is figure 3, simulation with SMARTPLS software;

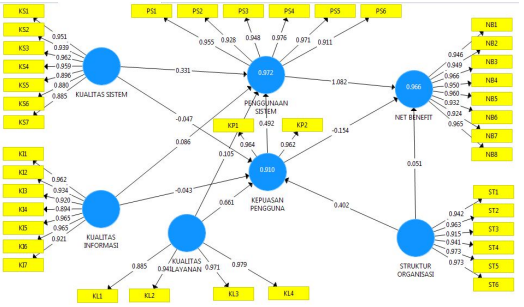

Figure 3. PLS Implementation

The calculation results show that the loading factor value above 0.70, so that all indicators have met the convergent validity and stated enough.

Discriminant validity is used to test the measuring instrument, whether precisely measuring the measured construct, not the other constructs. Table 1 below shows the average value;

Tabel 1 AVE value

No	Indicator	Value
1	KS	0,856
2	KI	0,879
3	KL	0,892
4	KP	0,927
5	PS	0,899
6	ST	0,905
7	NB	0,901

After analyzed on the value, the result of the questionnaire obtained shows the tendency that fewer respondents who choose low number (disagree or disagree) will produce higher mean value, this can be seen with the average value generated by ST and KP variable high.

Reliability test is measured by two criteria, namely composite reliability and cronbach alpha from blocks of indicators that measure the constructs. The results

of the processing using Smart PLS can be seen in Table 2 below;

Table 2. Reliability Value

No	Indicator	Composite Reliability	Cronbachs Alpha
1	KS	0,977	0,972
2	KI	0,981	0,977
3	KL	0,971	0,959
4	KP	0,962	0,921
5	PS	0,982	0,977
6	ST	0,983	0,979
7	NB	0,986	0,984

In Table 2 it is known that composite reliability and cronbachs alpha in the model show that the construct has satisfied the reliability. The construct is declared reliable if the value of composite reliability is greater than 0.7. while Cronbach Alpha is greater than 0.6

Inner model is used to evaluate the relationship between latent constructs as has been hypothesized in this study. Influence between variables indicated coefficient parameters and significance t-statistics. Here is the result of hypothesis table 3;

Tabel 3 Correlation Result

H(n)	From	To	Path Coefficient	T Value	Result
H1	KS	PS	0,33	2,63	Accepted
H2	KS	P	0,40	3,16	Accepted
H3	KI	PS	0,09	0,92	Rejected
H4	KI	KP	-0,04	0,26	Rejected
H5	KL	PS	0,11	2,55	Accepted
H6	KL	KP	0,67	3,34	Accepted
H7	KP	PS	0,50	3,94	Accepted
H8	ST	KP	-0,05	0,22	Rejected
H9	PS	NB	1,09	4,94	Accepted
H10	KP	NB	0,15	0,84	Rejected
H11	ST	NB	0,05	2,49	Accepted

From Table 3 above the hypothesis can be rejected or accepted by looking at the value of statistical T and the path coefficient. In hypothesis testing the level of significance used is 95% ($\alpha = 0.05$). The value of t table with 95% significance level is 1.96.

5. DISCUSSION

Based on the evaluation, then; (1) Analysis of influence shows hypothesis to influence analysis between variables. The acceptance of this application prototype is influenced by system quality factors, information quality, service quality, system usage, system satisfaction and the role of organizational structure; (2) System quality affects system usage and user satisfaction. This means that the higher the quality of the system on the prototype of this application, the more increasing the use of the system and user satisfaction with the prototype, (3) The quality of information has no effect on the use of the system and user satisfaction; (4) Quality of service affects system usage and user satisfaction. This means the higher the quality of service on the prototype, the more the system usage and satisfaction

6. CONCLUSION

The conclusion of research that discuss about the design of Learning Management System application architecture is to answer the problem formulation that is, Activities and learning process at Slamet Riyadi University can be implemented into Learning Management System concept. The application architecture of Learning

Management System at Slamet Riyadi University can be implemented well into the prototype using the modified Borg and Gall development method.

In addition the prototype tested so as to obtain validation results on testing of respondents ie end users, as well as resource persons ie experts in the field of IT and curriculum field. The tests were conducted on a HOT-fit model, which includes Human, Organization and Technology. With the HOT-fit mapping model, successfully elaborated some hypothesis of acceptance where the resulting number indicates that the prototype is well received by end users in this case are lecturers and students. While the test of the expert knowledge of IT and curriculum done with heuristic evaluation by generating opinions and improvements from the expert that the prototype can be received well so that it can be a consideration of recommendations to be developed

7. REFERENCES

DeLone, W, H., dan Mclean, E.R. (2003). *The DeLone and McLean Model of Information System Success: A Ten-Year Update Management Information System*. Vol 3. Nomor 1. Institue Of Management

Magai A, (2009). *E-Learning in The Indonesia Education Syste*. Asia Pacific Cyber Education Journal Vol 1 No 2. 2005 hlm 15-24.

Satzinger, J., (2012) *System Analysis and Design in a Changing World*. USA. Boston : Course Technology

Sugiyono , (2004). Statistik Untuk Penelitian . Jakarta: Alfabeta

Wahono S.R, (2007). Sistem E Learning Berbasis Model Motivasi Komunitas. urnal Teknodik No. 21/XI/TEKNODIK/ AGUSTUS/2007, Agustus 2007

Yusof, R. J. Paul and L. K. Stergioulas, (2006). "*Towards a Framework for Health Information Systems Evaluation*," Proceedings of the 39th Hawaii International Conference on System Sciences.