Assessment of Lecturer Satisfaction, Working Quality and Productivity Toward Learning Management System

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Abstract—**The purpose of this research is to assess the lecturer satisfaction, working quality, and productivity toward Learning Management System (LMS) and to know the extent the effectiveness of LMS for the lecturers. The study case was conducted in a Private University in Bandung. This research used quantitative method by performing study case in a private university in Bandung. Path Analysis and T test and F test were used to analyze the questionnaire data. The respondents were 185 lecturers and were requested to filled up the questionnaire. Interview to entrepreneurship lecturers was also performed to support the data analysis. The result of this study found that LMS influence job satisfaction through work productivity and work quality improvement. It is shown by significant value of all measured variables the working quality, productivity, and satisfaction of lecturers. The positive correlation between all variables and significance influence explained that the lecturers viewed LMS as an effective tool in learning and teaching process. Since LMS makes the easier procedure of assignment submission, scoring process, and communication between lecturers and students, it was assessed as an effective tool. The research provides recommendation to develop LMS and shifting from the conventional system as one way to answer the challenge of digital environment.**

Keywords— *Satisfaction, Working Quality, Productivity, Learning Management System, Lecturer, University*

I. INTRODUCTION

In the digitalized era, the transformation on the university management is necessary to win the tight competition. Shifting conventional way to a modern way, especially in learning and teaching is one of technological approach to supply high quality services for university to stay competitive [1]. In addition, the higher demand of education combined with new technologies application can leverage the abilities of university to compete in the modern era [2]. The developments of various technologies such as web site and e-learning technology should be considered by a university to respond this challenging environment. Furthermore, the application of technology may become marketing tool for the program of university [3]. Learning Management System (LMS) as the part of e-learning is an intelligent pathway to provide university stakeholder with tools for independent work and collaborative activities [4].

Learning Management System (LMS) provides media for discussion, assignment submission, lectures material, and information sharing. Thus, LMS has rapidly adopted in universities as a means in the reformation on its learning and teaching quality [5].

The application of LMS in university leads to the enhancement of learning and teaching experience. There were many previous studied indicating the satisfaction, working quality and productivity toward LMS. The research of Dahlstrom, et al (2014) found that the lecturers and faculty members value LMS as the great tool to bridge communication between them and the students. They claimed that three from four faculty argue that the LMS is beneficial for improving teaching by 74% and students' learning by 71%. Three faculty from five considered that the LMS is crucial to their teaching. The highest percentage by 85 % use the LMS to support their teaching activities [6]. Reviewing the beneficial of LMS from the perspective of the students, the prior research found that facilities, instruction medium, course content, lecturer, and faculty were significantly affecting student satisfaction [7].

The research of Almarashdeh (2016) confirm that LMS is significantly influence user satisfaction. Usefulness and service quality contribute the highest score on the satisfaction [8]. Fathema et al (2015) discovered that system quality; perceived self-efficacy and conditions of facilities were significantly affected the satisfaction toward the LMS [9]. However, only few literatures were found linking about the LMS with the working quality and productivity. Pradana et.al (2017) indicated that the use of information system in employee management has influence employee productivity [10]. In line with this, the findings of Cobanoglu (2018) noted that 70.4% of student teachers prefer LMS [11]. Unfortunately, the research specifically in terms of working quality was not found. Indeed, there is no research that measures three variables which are satisfaction, working quality, and productivity toward the use of LMS highlighted in the university framework from the perspective of lecturers. The comprehensive research needs to be conducted in order to obtain the bigger frame of LMS development.

Thus, the contribution of research will be more applicable for university, especially for the lecturer, division of information system development, top leader in university to make decision concerning the right pathway to develop LMS.

This research aimed to perform an assessment concerning the lecturer satisfaction, working quality and productivity toward Learning Management System (LMS) and to what extent LMS effective in the perspectives of the lecturers. The method uses quantitative by performing study case in a private university in Bandung. Path analysis and T test was performed to analyze questionnaire data.

II. METHODS

The research was done at Universitas Komputer Indonesia. A series of questionnaires were distributed to 185 lecturers. Scoring by Likert scale was performed toward the statement of questionnaires [12]. Additionally, interviews with the lecturers as the users of LMS and collection of related reports/documents was conducted for completing data analysis. The questionnaires were distributed within 20 - 25 May 2019.

This research has several hypotheses to be analyzed:

H1. The LMS has significant influence on lecturer satisfaction

H2. The LMS has significant influence on working quality of lecturers

H3. The LMS has significant influence on working quality of lecturers

The validity test was performed by using Pearson Correlation. While reliability test was performed by using Cronbach Alpha formula. The hypothesis was analyzed by T Test and Path analysis. Path analysis is based on multiple regression analysis that describe relationship between independent and dependent variable [13].

III. RESULTS AND DISCUSSION

Reliability and validity test were performed before path analysis (see Table I). Validity test was conducted by Pearson Correlation and reliability test was measured by Cronbach Alpha.

TABLE I. THE RESULT OF VALIDITY AND RELIABILITY TEST

Variables	Statements	Validity	Reliability
Work Productivity	WP1	0.747	0.878
	WP2	0.801	
	WP3	0.809	
	WP4	0.762	
	WP5	0.799	
	WP6	0.815	
Work Quality	WQ1	0.853	0.898
	WQ2	0.780	
	WQ3	0.842	
	WQ4	0.833	
	WQ5	0.816	
	WQ6	0.762	
Job Satisfaction	JS1	0.794	0.899

All the statements show validity at the significance level of 0.010. The results of reliability test also show that all

statements are reliable since the Cronbach's Alpha values more than 0.600. Then, path analysis is performed to analyze valid and reliable data. This test is used to determine whether the research model hypothesis is accepted or rejected. The following is a structural equation of research using the path analysis method. Fig 1. is a structural equation of research using the path analysis method:

$$JS = 0.212*WP + 0.656*WQ, \quad Errorvar.= 1.930 \ , \quad R^2 = 0.818$$
$$(0.0617) \quad (0.0553) \quad (0.202)$$
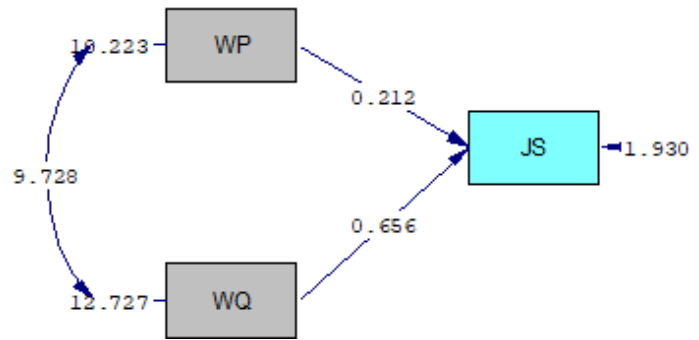$$3.442 \quad 11.874 \quad 9.539$$

Fig 1. Estimated Model

Fig 1. show that the estimated value of work productivity is 0.212, which means if work productivity gaining by 1, it will increase job satisfaction by 0.212. In the other hand, estimated value of work quality is 0.656, that means if work quality gaining by 1, it will increase satisfaction by 0.656.
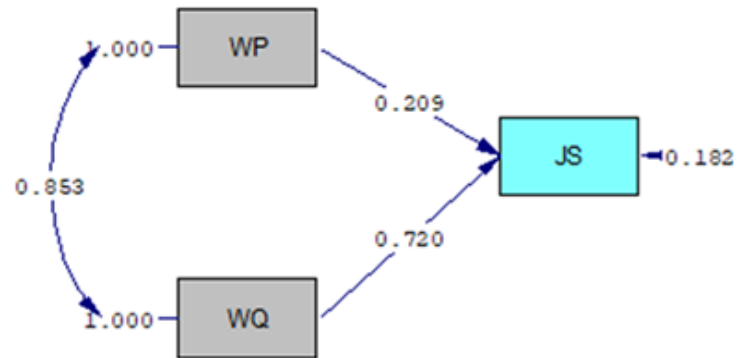

Fig 2. Standardized Solution

Standardized solution value on Fig 2. is used to calculate direct and indirect effect of the model. Table 2 below shows direct and indirect effect of work productivity and work quality toward Job Satisfaction. Both of variable, work productivity and work quality have the direct effect toward Job satisfaction. Note that work quality contributes the highest direct effect by 51.8%. Meanwhile, work productivity contributes by 4.4%. Total direct effect from both variables is by 56.2%. The remain direct effect by 43.8% could be contributed by other factors that is not included in this research., T-test were conducted to analyze the research hypothesis to determine whether work productivity and work quality have a significant influence both partially and simultaneously (Table II).

TABLE II. DIRECT AND INDIRECT EFFECT OF WORK PRODUCTIVITY AND WORK QUALITY TOWARD JOB SATISFACTION

| | Job Satisfaction | | Total Effect |
	Direct Effect	Indirect Effect	
Work Productivity	$0.209^2 =$ 0.044	0.209 x 0.853 x 0.720 = 0.128	0.172
Work Quality	$0.720^2 =$ 0.518	0.720 x 0.853 x 0.209 = 0.128	0.647

The analysis result shows that the use of LMS contributes work quality by 51.8% toward job satisfaction. This is compatible with the previous studied conducted by Preus (2003). He found that in terms of information system application, the high-performance quality could be promoted by enabling the employee to use their skills and providing knowledge to use the application in the routine tasks [14]. Both variable, work productivity and work quality indicate significant effect. This confirms the prior survey conducted by Educause center for analysis and research (ECAR, 2014) indicated that the satisfaction toward LMS is influenced by better communication, by messaging system in LMS. The survey results also indicated that LMS creates benefit to teaching activities. Grading system is more transparent and allows students to track their course grade anytime [6].
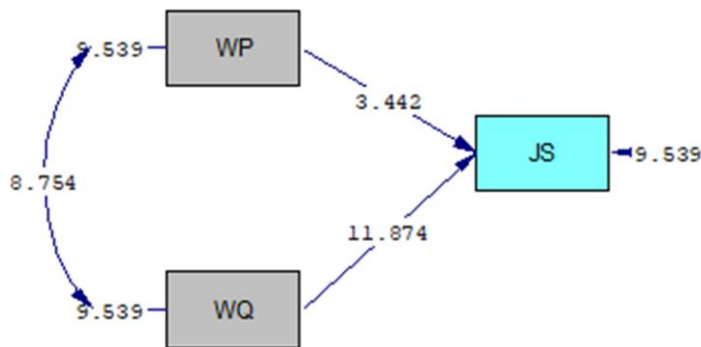

Fig 3. T Values

H1 states that The LMS has significant influence on lecturer satisfaction. The path diagram shows T-value of 3.442, which has a greater value than T-table. This result proves that there is a significant effect of work productivity toward job satisfaction, and then H1 is accepted. Hoboubi et al (2017) showed the similar result that productivity strongly associated with the job satisfaction [15]. Platish (2014) in his research proved that strong relations between job satisfaction and productivity in healthcare services [16].

Meanwhile, H2 stated that The LMS has significant influence on working quality of lecturers. T-value by 11.874 in the path diagram proves that there is significant effect of work quality on job satisfaction therefore H2 is accepted. There is not much literature describing about work quality rather than work productivity. Work quality is more difficult to be measured. It is discovering the mastership of broad knowledge, skills, operational ability and techniques in completing work. In this term, ability is the competence of an employee in mastering the production process.

To analyze the simultaneous effect of work productivity and work quality toward job satisfaction, statistical F-test is used (Formula 1):

$$F\ value = \frac{(n - k - 1)\ R_{xy}^2}{k\ (1 - R_{xy}^2)} \quad (1)$$

n = number of samples in this research,
k = number of independent variables, and
R2 =coefficient of determination

$$F\ value = \frac{(185 - 2 - 1)\ 0,818}{2\ (1 - 0,818)} = 409$$

$$F\ table\ (0,05 ; 2 ; 182) = 3,046$$

H3 states that there is simultaneous effect of work productivity and work quality toward job satisfaction. Result is shown above with F-value of 409 which has a greater value than F-table of 3,046. This result proves that there is a significant effect of work productivity and work quality toward job satisfaction simultaneously. Therefore, H3 is accepted.

Noted that work productivity showed partial effect on job satisfaction because T-value (3.442) is greater than T-table (1.973), it can be concluded that work productivity determines job satisfaction, the better work performance, the higher job satisfaction. In addition, work quality has a significant effect on job satisfaction because T-value (11.874) is greater than T table (1.973), it can be concluded that work quality determines job satisfaction, the better work quality, the higher job satisfaction. The result of table 2 shows that work quality contributes the higher percentage toward job satisfaction compare to work productivity.

The result of the study is suitable with the prior studied of Mor et.al (2015). They found that technology-rich environments help the teachers to perform more collaborative approach on their teaching. Indeed, online environments stimulating the improvement of teacher quality, in terms of the scientific quality, and in terms of professional development [17]. Highlighted the use of LMS specifically, LMS creates a better communication between lecturer and students. The added value of LMS application in the university indeed shows by the rich of features in LMS (figure 4-7). In the perspective of teacher, LMS provides the transparencies and the easiness for scoring. Since LMS is linked with the plagiarism checker, it is greatly contributed to the increasing of assessment quality (Fig. 4-5). In professional term, the LMS encourages teacher to perform better communication anytime, not only in the classroom.

Confirming the result of the study, ECAR (2014) stated that LMS can answer the challenge of the technical, procedural, and process in enhancing qualified interaction among users (in this term are lecturers and students). It allows for "what works for me" personalization in the setting of system and interface; and add value to the student experience with early alerts and predictive modeling

Suggestions for promoting success strategies within and across courses [6]. However, the quality of LMS should be promoted with the mastering of the LMS itself. The result of prior survey discovered that 70% of academic staff (67 of 96 respondents) experienced problems with information system and it was mostly related to software problem. The infrastructure development of LMS should be well prepared. The system should be user friendly and the socialization toward the use of LMS should be a special concern [18].
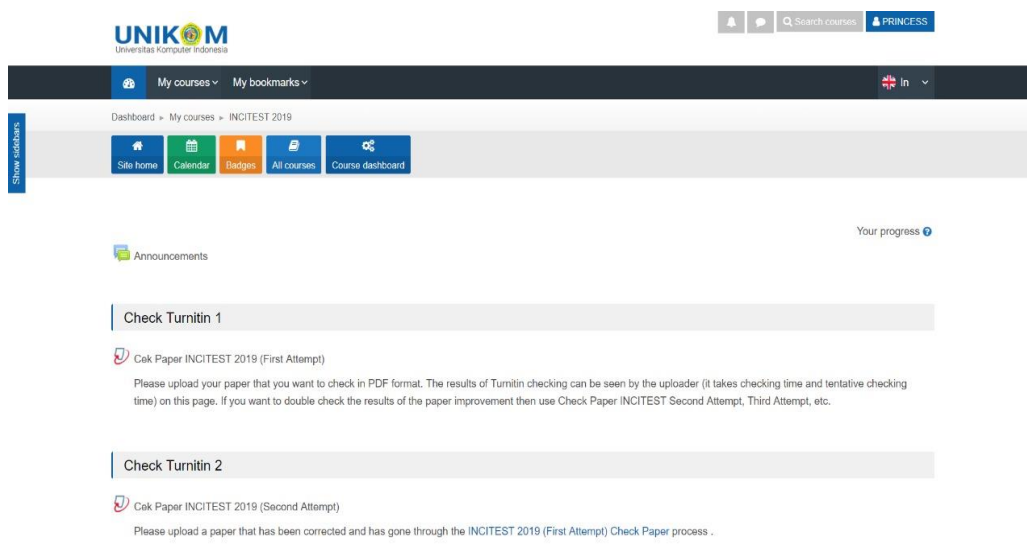

Fig 4. Main menu in LMS

Fig 5. Plagiarism checker in LMS

The LMS is able to incorporate the plagiarism checker software to the system to assure the quality of work. Plagiarism detector software resulted the output in the form of data presentation, if the data (in the form of papers) obtained words, sentences or paragraphs, then the software gave sign relevant to the LMS features designed. Then the lecturer and the students are able to check their work directly and revise it based on the similarity index [19] (Fig. 6-7).
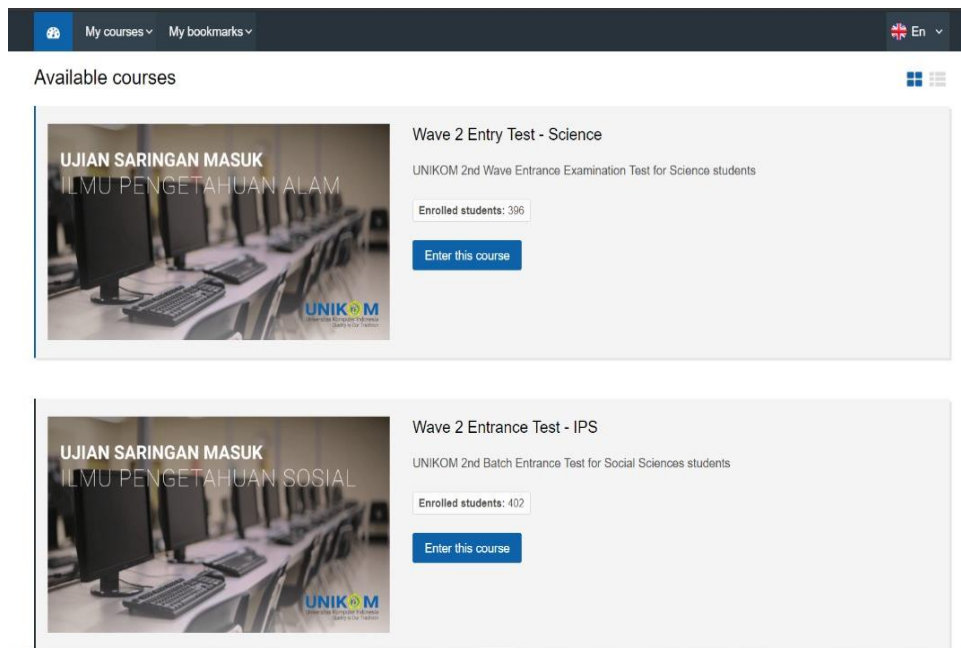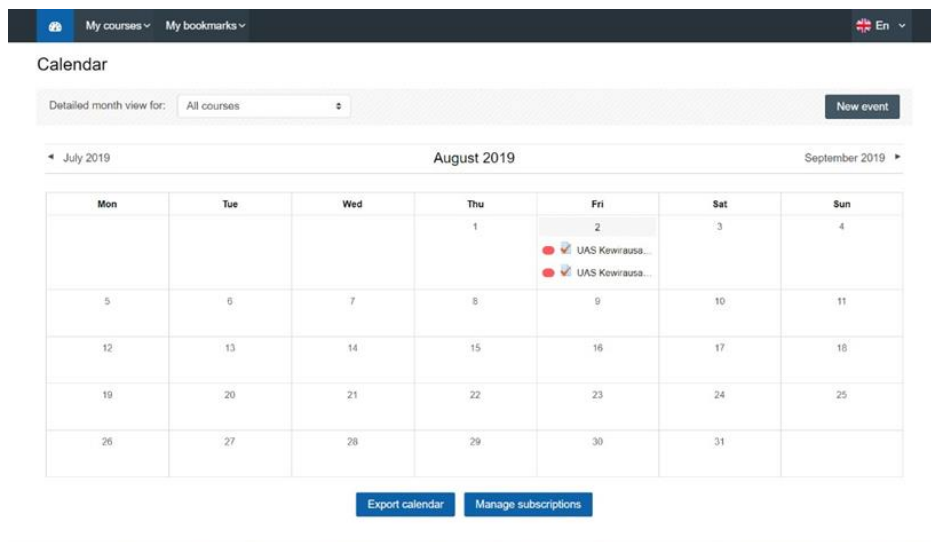
Fig 6. The Assignment Submission in LMS

Fig 7. Course Management of LMS

The features of assignment submission in LMS enable the students to develop their own time management. This is in line with the statement of the previous researcher, who said that the learning process must improve based on Students' self-governed and problem-solving activities [20]. Similar approach conducted by Peng and Samah (2006), facilities is included as one of the most important factors in determining the level of satisfaction beside course content, instruction medium, facilities, lecturers and faculty [20].

Therefore, LMS as one of facilities, which make the lecturer's work easier, indicated increase the level of satisfaction of the lecturer. As the consequences, higher initiative of the students in the assignment submission and automatically Turnitin checking indicated the higher satisfaction and productivity of lecturers.

III. CONCLUSION

The result of the research indicated that LMS shows the significant influence on all measured variables that are work productivity and work quality which in turn will promote the improvement of job satisfaction of lecturers. However, its need the socialization in the use of LMS, introduction on LMS features and the development of LMS infrastructure to support the effective application of LMS in the university. The finding of the research contribute reference for shifting conventional learning and teaching to technology-based education, such as LMS application in the university.

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