

## The Effect of Knowledge Management Integration on E-Learning System toward Lecturers' Performance at University Institutions

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### ABSTRACT

This study was designed to 1) measure the effect of knowledge integration and e-learning on lecturers' performance and 2) examine the effect of work procedures and information technology on the performance of lecturers at State University of Malang, Indonesia. Anchored by a survey study and document analysis, the present study revealed that knowledge management indirectly affects lecturers' performance. Our findings also uncovered that there is a significant influence between personal knowledge on work procedures, and the most dominant factor affecting their performance is information technology. Based on the findings, this study can be a catalyst for improving the quality of higher education through the application of knowledge management on e-learning. Furthermore, the results are worthwhile to be used as lecturers' performance enhancement in university levels.

**Keywords:** Knowledge management; E-learning; Performance; Lectures.

### 1. INTRODUCTION

In higher education contexts, improving human resources (e.g., lecturers) are necessary. In this regard, knowledge management can be a catalyst to enhance lecturers' service quality and competitiveness<sup>4,6</sup>. Theoretically, knowledge resides in humans and it is difficult to share with others<sup>10</sup>. With the advancement of information and communication technology, as well as virtual communities in the world of education, there will be more significant opportunities for people to be involved in sharing knowledge<sup>13</sup>. However, reluctance to share knowledge has been one of the most problematic issues in the communities<sup>20,22</sup>.

### 2. LITERATURE REVIEW

Knowledge is a typology of data, information, knowledge, and wisdom (Ackoff<sup>1</sup>). According to Davenport<sup>5</sup>, knowledge is a fusion of experience, values, information, conceptual experts, and enlightenment that provides a framework for evaluating and accepting new experiences and information. There are two types of knowledge, namely tacit knowledge and explicit knowledge<sup>21</sup>. According to Nonaka and Takeuchi<sup>14</sup>, explicit knowledge and understanding should be easily articulated or understood in writing. Explicit knowledge can be summed up as documented knowledge, which means that it has been recorded or stored in a database and can be learned by everyone directly. Standard Operating Procedures (SOPs) are examples of documented knowledge. Tacit knowledge is located in someone's mind or brain, which is obtained through experience

and work<sup>19</sup>. According to Collison and Parcell<sup>3</sup>, knowledge management can be seen from various perspectives, including the humans, process, and technology.

Knowledge management can be seen as a holistic approach to achieving institutional goals by focusing on knowledge<sup>2</sup>. The implementation of the e-learning system integrated with knowledge management in higher education institutions is the result of the development of science and technology. Therefore, the government must advocate the e-learning and implementation of virtual campuses, especially in universities<sup>11</sup>.

The world is currently moving towards the era of digitalisation of knowledge, making e-learning a very important problem to be developed by integrating e-learning with knowledge management. E-learning is used in education and is the application of internet technology in the teaching and learning process, while knowledge management is the process of capturing, disseminating, applying, and managing organisational knowledge. E-learning focuses on the delivery of knowledge because knowledge management is aimed at capturing knowledge, but they are two complementary processes if properly integrated<sup>21</sup>.

Today's world is integrated through the internet, making it easier for humans to access and disseminate information. Teachers easily spread knowledge to students through the e-learning system. With the development of increasingly sophisticated technology and more abundant information, teachers and students are confused about getting information and knowledge. So they need a strategy to make it easier to retrieve information and knowledge that is scattered in

cyberspace. This can be overcome with knowledge-based e-learning technology. It is assumed that the application of an e-learning system that is integrated with knowledge management can simplify the remote learning system. However, not all e-learning can make learning easier because the more sophisticated the technology, it causes disruptive technology and information. Therefore, the application of knowledge management in e-learning in tertiary institutions needs to be examined for its impact on teacher performance.

**3. METHODOLOGY**

Participants involved in this study were 83 lecturers from State University of Malang, Indonesia. They were recruited based on pre-determined criteria<sup>7</sup> such as tenured lecturers and had been teaching for at least two years.

The type of data in this research was quantitative data, in the forms of measurement of the variables to be tested, namely personal knowledge, Standard Operating Procedure (SOP), technology, and lecturers' performance. These variables were obtained from a questionnaire and measured using a Likert scale. The data were collected using the following methods.

**3.1 Primary Data Collection Method**

The method used by the researchers to collect primary research data was a survey with a questionnaire as the instrument. The questionnaire on knowledge management is divided into five parts, namely a) respondents' demography information, b) questions related to experiences, c) questions related to information and communication technology, d) questions related to SOP, and e). questions related to lecturers' performance.

**3.2 Secondary Data Collection Method**

Secondary data will be obtained from the SOP of State University of Malang lecturers, State University of Malang organisational structure, and State University of Malang lecturers' job descriptions<sup>9</sup>.

**4. RESULTS**

**4.1 Descriptive Analysis**

In this analysis, data on personal knowledge variables, work procedures, technology, and lecturers' performance are indicated through tables. Each variable has four answers, i.e., strongly agree (4), agree (3), disagree (2), and strongly disagree (1). In explaining this descriptive analysis, the average scores were discussed, with the following conditions:

Information	Score
Top rated	4
Lowest value	1
Interval	0.75
Average values very low	1.00 and 1.75
Average values high	2.51 and 3.25
Average values very high	3.26 and 4.00

Descriptive analysis results are shown in Table 1. The descriptive analysis showed that personal knowledge variables

**Table 1. Descriptive research variables**

Variable	Mean	SD	Correlation			
			1	2	3	4
Lecturers' performance	3.28	0.32	1			
Personal knowledge	3.27	0.56	0.566* (p=0,000)	1		
Job procedure	3.20	0.46	0.610* (p=0,000)	0.527* (p=0,000)	1	
Technology	3.41	0.40	0.621* (p=0,000)	0.584* (p=0,000)	0.647* (p=0,000)	1

Note: significant at the 5% level

had an average score of 3.27 and a standard deviation of 0.56. It means that lecturers' knowledge is included in very high criteria, meaning that each lecturer is experienced in their field, gaining new experiences every day from themselves or others so that the lecturers work more professionally. Personal knowledge had a significant relationship with the performance of lecturers indicated by a correlation coefficient of 0.567 (p = 0.000 <0.05). A positive correlation coefficient means that the higher the personal knowledge, the higher the performance is.

The descriptive analysis of work procedure variables had an average score of 3.21 and a standard deviation of 0.41. It means that lecturers' work procedures are included in the high criteria, so the responsibilities or tasks that the lecturers realise are based on the existing SOP. Work procedures had a significant relationship with lecturers' performance, as indicated by the correlation coefficient of 0.611 (p = 0.000 <0.05). The positive correlation coefficient means that the higher the work procedure, the higher the performance is.

The descriptive analysis of technological variables had an average of 3.42 and a standard deviation of 0.41. It means that the ability of lecturers to use technology is good, so lecturers have been utilizing the media to spread information through the internet to support every work activity. Technology had a significant relationship with performance, as indicated by the correlation coefficient of 0.622 (p = 0.000 <0.05).

The positive correlation coefficient means that the higher the technology, the higher the performance is.

According to the analysis, it can be concluded that the lecturers have a very high level of performance. This result is shown by the average lecturers' performance of 3.29 and the standard deviation of 0.33. It shows that lecturers' performance to accomplish the goals of the learning system in higher education is good since it meets the quantity and quality standards that have been set in the strategic planning of the institution, working time, attendance at work, and the cooperative attitude.

**4.2 Regression Analysis**

Of the analysis of the effect of organisational commitment on lecturers' performance lecturers is indicate in Table 2.

*4.2.1 Simultaneous Statistical Test*

Table 2 is the result of an analysis of the effect of commitment on lecturers' performance.

**Table 2. Analysis of the effect of commitment on lecturers' performance**

ANOVA <sup>b</sup>					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.701	3	1.234	22.977	.000 <sup>a</sup>
residual	3.759	70	.054		
Total	7.460	73			

a. : Predictors: (constant), technology, personal knowledge, job procedure  
 b. : Dependent variable: lecturers performance

**Table 3. The analysis of coefficient of determination of the model summary**

Model	R	R Square	Adjusted R Square	St d. Error of the estimate
1	.704 <sup>a</sup>	.496	.475	.23172

a. : Predictors : (constant), technology, personal, knowledge, job procedure

**Table 4. Results of analysis of the influence of personal knowledge, job procedures, and technology on performance coefficients<sup>a</sup>**

Model	Unstandardised coefficients		Unstandardised coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.398	.238		5.868	.000
Personal knowledge	.137	.061	.241	2.240	.028
Job procedure	.204	.079	.296	2.586	.012
Technology	.230	.096	.288	2.400	.019

a. : Dependent variable: lecturerslecturers performance

Based on the Anova a t F-test, a F count of 22,977 was obtained with a significant level of 0.000. Therefore, F count was greater than the F table (2.74), and the probability of significance was 0.000 <0.05. Because the significance is less than 0.05, the regression model can be used to predict the performance of lecturers. In other words, personal knowledge variables, work procedures,

and technology has a significant influence on the performance of lecturers.

*4.2.2 Coefficient of Determination*

Table 3 is a collection of data from the analysis of the coefficient determination of the summary model.

The analysis of coefficient determination showed that statistical calculations with the variables of personal knowledge, work procedures, and technology on lecturers' performance were obtained R = 0.704. The R shows a double correlation, which is the correlation between two or more independent variables on the dependent variable. It means that the variables of personal knowledge, work procedures, and technology have a relationship with the performance of the

lecturers. The R Square from the regression test was 0.496 or 49.6 per cent. It shows that the independent variable's ability to explain the dependent variable is limited, which means that the independent variable, namely personal knowledge, work procedures, and technology, influences the dependent variable by 49.6 per cent performance. The remaining 50.4 per cent was explained by other factors beyond the three independent variables.

*4.2.3 Partial Statistical Test*

Table 4 is the result of data analysis of the influence of personal knowledge, work procedures, and technology on performance.

The regression equation model showed that a constant of 1.398 indicates that the lecturers' performance will be 1.398 points if personal knowledge, work procedures, and technology are equal to zero. The personal knowledge regression coefficient of 0.137 indicates that each increase of 1 unit of personal knowledge will improve lecturers performance by 0.137 units assuming the other variables are in a constant condition. The significance test showed a t value of 2.240 and a sig of 0.028 <0.05, which means that personal knowledge has a significant positive effect on the lecturers' performance. It means that the higher the lecturers's knowledge, the higher the performance. Therefore, the first hypothesis stating, "personal knowledge has a positive effect on performance", is supported.

The regression coefficient of work procedures of 0.204 indicates that each increase in work procedures of 1 unit will improve lecturers' performance by 0.204 units, assuming that other variables are in stable condition. The significance test shows that the t value was 2.586, and sig was 0.012 < 0.05, meaning that work procedures have a significant positive effect on performance. It means that the higher the work procedure of the lecturers, the higher the performance is. Therefore, the second hypothesis is supported.

The regression coefficient of 0.230 shows that for every 1 unit technology improvement, lecturers' performance tends to increase by 0.230 units, assuming that other variables are constant. The significance test showed a t value of 2,400 and a sig of 0.019<0.05, meaning that technology has a significant positive effect on the lecturers' performance. It means that the higher the lecture's use of technology, the higher the performance is. Therefore, the third hypothesis, is supported.

**5. DISCUSSION**

**5.1 The Effect of Personal Knowledge on Lecturers' Performance**

Based on the regression analysis, it appears that the variable of personal knowledge about performance had a significant level of 0.028 and Beta of 0.241. It can be concluded that the hypothesis (Ho) is rejected because of the probability of significance (0.028)<0.05 and Beta showed positive and significant results. It means that personal knowledge has a significant positive effect on lecturers' performance. Hypothesis 1 proposed in this study is accepted or proven. A similar study conducted by Kosasih and Budiani<sup>12</sup> found that personal knowledge has a positive effect on improving lecturers' performance. Personal management is a life plan

that involves long-term and short-term goals and investigates various ways to achieve goals. The experience gained by each lecturer is certainly differ based on unpredictable situations and conditions. Experience is gaining knowledge or abilities during a certain period and obtaining new experiences every day.

The experiences obtained by lecturers include (1) doing work or management, (2) experience of others, and (3) "sharing best practice" forums. Each experience includes valuable lessons, and experienced lecturers tend to work more professionally.

### 5.2 The Effect of Work Procedures on Lecturers' Performance

Based on the regression analysis, the work procedure variable on performance had a significant level of 0.012, with a Beta acquisition of 0.204. It can be concluded that the hypothesis is accepted because of the probability of significance  $(0.012) < 0.05$  and Beta showed positive and significant results. It means that the work procedure variable has a positive effect on the lecture performance. Hypothesis 2 proposed in this study is accepted or proven. Every individual who has feelings is motivated to have more experience in their duties and responsibilities<sup>8</sup>.

If every lecturer understands their tasks and responsibilities, then it is certain that the lecturers' performance tends to improve in every aspect. In the educational world, SOP becomes the fundamental knowledge in doing tasks and responsibilities.

SOP aims to create a commitment to what is done by educational institutions' work units, namely providing a good education system. SOP has been enacted by higher education institutions such as State University of Malang. SOP is a collection of instructions covering operations or activities that use procedures for maximum effectiveness<sup>19</sup>. The SOP contains a series of written instructions about routine or repetitive activities carried out by a tertiary organisation. SOP is also equipped with references, attachments, forms, diagrams, and work charts<sup>21</sup>. The SOP manual is used as a guide to direct and evaluate work. With SOP, university leaders can assess work and measure the performance of the lecturers employ<sup>17</sup>.

### 5.3 The Effect of Technology on Lecturers' Performance

Based on the regression analysis, it can be seen that the technology variable on performance had a significant level of 0.019, and Beta of 0.230. Because the probability of significance  $(0.019) < 0.05$  and Beta showed positive and significant results, it can be concluded that the null hypothesis is rejected, meaning that technology influences the performance of the lecture. Hypothesis 3 proposed in this study is accepted or proven. Previous research revealed that the adoption of information technology positively and significantly affects lectures' performance<sup>10</sup>. The perception of the ease of information technology application is essential because this perception affects individual willingness to use information technology<sup>16</sup>. The results showed that a high perception of utilisation and perceived comfort would predict attention for using information technology.

Technological advancement has been very influential in human life, including the performance of lecturers<sup>16</sup>. One example of the influence of technology is how every day, new hardware and software helps increase productivity, increase knowledge, and provide various information. One of the latest technologies currently used by universities for knowledge dissemination is the e-learning system. It is based on the need to access knowledge, collaborate, communicate, and share knowledge online<sup>17</sup>.

## 6. CONCLUSION

The present study has attempted to measure the effect of knowledge integration and e-learning on lecturers' performance and examine the effect of work procedures and information technology on lecturers' performance at State University of Malang, Indonesia. From the findings of this study, three conclusions are obtained. First, Personal knowledge has a positive and significant effect on the performance of lecturers. It means that the higher the personal knowledge, the higher the performance of the lecturers.

Second, work procedure has a positive and significant effect on the performance of lecturers. It means that the better the Work Procedure, the higher the performance of the lecturers. Lastly, technology has a positive and significant impact on the performance of lecturers. It means that the higher the technology used, the higher the performance of the lecturers.

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