

THE INFLUENCE OF APPLICATION OF INFORMATION TECHNOLOGY TO LECTURER PUBLICATION PERFORMANCE THROUGH THE ABILITY OF INFORMATION TECHNOLOGY USERS

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Abstract

The purpose of this research is to analyze how the influence caused by the implementation of information technology at the university on the level of performance improvement of lecturers at the University/College by using the ability to use information technology as a moderating variable. The population in this research are all lecturers in the scope of work of Muhammadiyah University of Ponorogo, and Darrusalam Gontor University. The number of samples used was 135 lecturers. The results found in this study are; first, the application of technology has no significant effect on the performance of lecturer publications at Muhammadiyah University of Ponorogo and Darrusalam Gontor University. Second, the variable ability to use information technology has a role as a moderating variable on the effect of the application of information technology on the performance of lecturer publications, where the ability to use technology can strengthen the impact of applying information technology on improving the performance of lecturer publications. This shows that the implementation of technology by companies on human resources who already have excellent abilities in using technology will have a positive impact on the performance of lecturer publications.

Keywords: *information technology, the ability to use information technology, lecturer performers.*

A. INTRODUCTION

Information technology (IT) is experiencing a very rapid increase today, as can be seen from the use of technological equipment whose sophistication continues to increase with the reach being expanded. The rapid development of information technology is currently helping human activities so that they can complete their activities effectively, efficiently, and provide maximum results. Information technology is technology in the form of technical equipment that has the function of processing and distributing information. This shows that information technology as a piece of equipment that acts as a data or information processor (Sutopo, 2012).

Digital technology is an integral part of the company's resources and managers in carrying out their business activities (Griffin, 2004). Information technology (IT) will play a role in the process of acquiring and storing information that can help in the decision-making process. The application of IT in an organization or company must be based on what the company needs means that when organizations need the latest IT applications, organizations must consider fulfilling the latest IT applications and replacing old IT systems to improve and help organizations become more competitive in competition.

In the world of education, the application of information technology is needed to support the operational activities of educational institutions such as tertiary institutions. The latest and most sophisticated IT applications will be able to have a positive impact on the performance of higher education, especially the performance of corporate human resources (Santoso et al., 2020). This is as obtained from the results of research conducted by Wiseliner (2013) who found that the application of information technology has a positive and significant effect on improving employee performance, meaning that every use of information technology in the company changes, employee performance will also change so that it can be concluded that information technology is an independent variable that can be used to influence employee performance (Hasibuan, 2015).

The successful application of information technology in tertiary institutions must be supported by the ability of lecturers (teaching staff) as human resources who will use information technology. To operationalize IT the majority of its application still depends on human resources; therefore

organizations need to pay attention to the competencies of the educators to be able to operationalize the information technology in their activities of running the tri dharma of higher education to be able to produce better and significantly improved performance (Santoso, 2015).

The better the competence of educators in operating IT, the easier it will be to implement the activities of teaching staff (lecturers) in carrying out their duties, especially matters relating to the implementation of College *Tri Dharma*.

B. LITERATURE STUDY

IT Application

Information technology is developing very advanced and significant so that it brings changes to the activities of organizations, which now access information from around the world is unlimited because information technology is a driving factor for the broader range of information that can be accessed by organizations so that the application of information technology by organizations is part of the mandatory needs that must be done or implemented by the organization.

There are various types of technology, especially those related to information technology systems, such as computer-based information technology systems, communication technology systems and different other kinds of information systems that can be implemented by organizations to provide added value and have a positive impact on the ease of operational organization and increase organizational development. Organizations that implement computerized-based information systems will have comfort in managing corporate activities to facilitate organizations to access information widely to create superior competitive advantage and win the business competition (Jogiyanto, 2009).

Information technology systems have benefits in terms of work effectiveness. Where information technology will provide the ease for Human resources in organizations to carry out work tasks effectively and effectively, the implementation of information technology will minimize the occurrence of human errors that often occur if the completion of a job is done manually or traditionally (Uno & Lamatenggo, 2011).

Indicator of IT Implementation

Some dimensions used to measure the application of information technology are as follows; (Sabihaini, 2016)

1) Social factors.

Every party in the organization, both internal and external parties, supports is the application of information technology in the organization.

2) Facilitating conditions.

The company considers that the use of information technology in the organizational environment will be able to have a positive effect on the ease of human resources in completing work and minimize the occurrence of work errors due to human error.

IT User Capabilities

Every human being created will have an innate nature that includes physical and non-physical (mental) abilities to be used in carrying out an action or completing work. One of these inherent traits is individual ability (Winardi, 2014). Every human being has different skills; capabilities can be improved through self-development that is done repeatedly - so that the strength of self-increases to the maximum. The ability will encourage the individual to be stable in achieving maximum levels of achievement.

Human resources who have good ability in the field of technology use will be natural to implement the use of technology in their daily activities such as using technology to get work done, social, and so on. Human resources who are technology literate will be natural to train in the use of new technologies implemented by the company (Anwar, 2012). The organization needs the ability of human resources who are literate towards the use of technology because organizational development cannot be separated from the implementation of technology in its activities, and it requires human resources who have good ability in the use of technology (Pirade, 2013). No matter how high the technology used by

the company, if it is not in line with the ability of employees to use the technology, it will raise new problems in implementation (Kreitner & Angelo, 2013).

Ability is something related to human talent in completing tasks that are physical or mental (Antonio & Safriadi, 2012). Capacity can be interpreted as an essential factor in empowering high-performance employees with low performance: mental ability, emotional intelligence, and tacit knowledge (Ivancevich, 2018).

Indicator of IT user ability

According to Robbin & Timothy (2012) indicators of user ability, including:

1. Knowledge
 - a. Having a good insight into information technology systems
 - b. Having insight into work tasks that can be completed using information technology
2. Expertise
 - a. Expert in responsibility for work
 - b. Expert in determining the right information technology in completing work

Lecturer Performance

According to Bangun (2012), performance is everything related to the results achieved based on what has become the size or work requirements. The work results must be measurable and observable to be assessed as a performance (Prasetya, 2010). Lecturer performance is the achievement of the work successfully obtained by the lecturer in a period that is measured both through the quality obtained and the quantity produced. One of the amounts that are a measure of lecturer performance is the ability of lecturers to provide research, service, teaching, and scientific publications; the more quantities produced, the better the performance. In addition to the quality of work, results can be assessed from the level of success in teaching, the level of research grants received, and the level of publication that was successfully carried out.

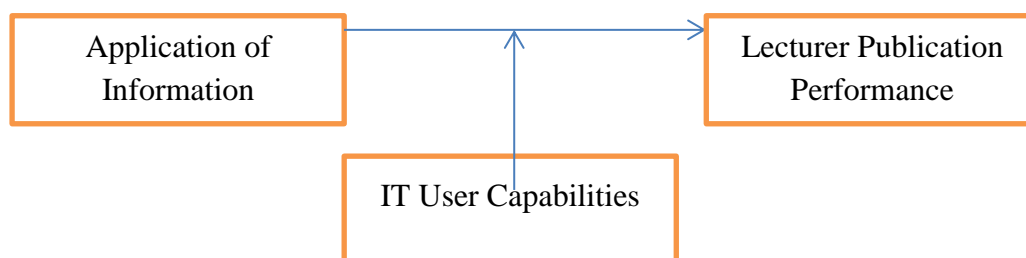
Lecturer Performance Indicator

As previously explained that the performance of lecturers can be measured by the quality and quantity of their work achievements in one period. Some obligations that must be carried out by lecturers as a form of work responsibilities as lecturers are the implementation of the Tri Dharma namely carrying out teaching, research, and service, in a way the application can also be assessed from publications made for example teaching by publishing textbooks, research, and assistance with publishing scientific papers in which all of these are responsibilities that must be carried out as functional academic staff. The success of lecturers in achieving excellent performance is influenced by many factors, both internal (internal) and external (external) factors.

In this study, the performance evaluation of lecturers is carried out by the lecturer himself. Madgopes in Fitriana (2016: 18) mentions, namely:

- a. Quality of Publication
- b. Number of publications

Framework



C. IMPLEMENTATION AND METHODS

Population

The population is everything that has a relationship with the object of research (Sulistyo, 2016). The people in this study were all lecturers or educators who were in the Scope of *Muhammadiyah University of Ponorogo* totaling 205 lecturers and in the scope of *UNIDA Gontor* as many as 194 lecturers so that the total population was 399 lecturers.

Sample

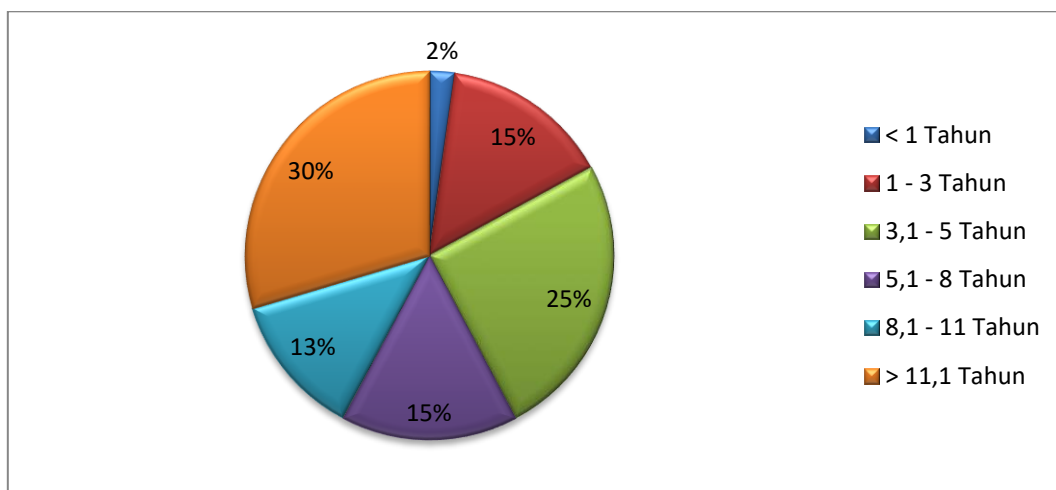
The sample is part of a population that is considered to be representative of that population. Determination of respondents in this study will be carried out using accidental sampling method, which is a sampling technique based on coincidence, that is, respondents who have been accidentally met and are willing to fill in the questionnaire and are considered suitable as a source of data. The number of samples used in this study amounted to 135 lecturers.

D. RESULTS AND DISCUSSION

Characteristics of Respondents based on years of service

Based on the questionnaire distributed to respondents, information was obtained that lecturers at *Muhammadiyah University of Ponorogo* and *Darussalam Gontor University*, the majority had worked as lecturers for more than 11 years, as shown in Figure 1 below;

Figure 1.1.
Characteristics of Respondents based on years of service

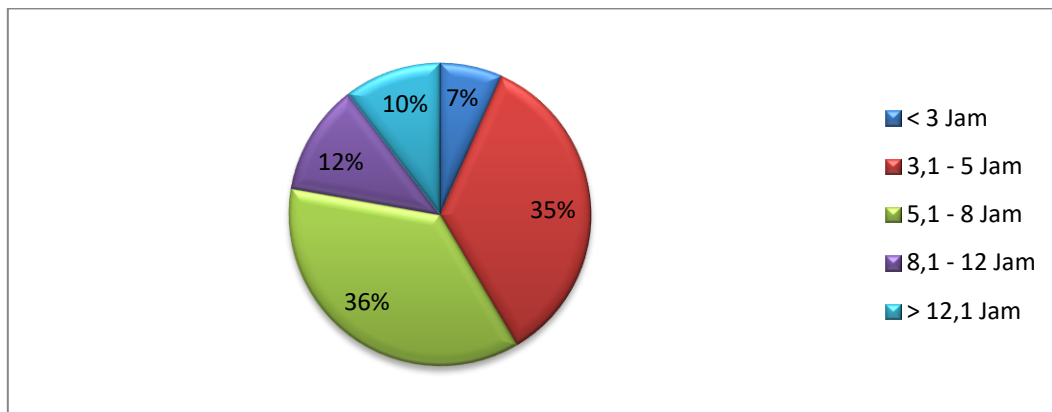


Based on the data in Figure 1.1, it can be concluded that the majority of lecturers at *Muhammadiyah University of Ponorogo*, and *Darussalam University Gontor* have worked for more than 11 years. The performance they produce to develop their respective institutions.

Characteristics of Respondents based on the intensity of technology use

Based on information obtained from respondents through questionnaires that have been given to respondents, it is known that lecturers at *Muhammadiyah University of Ponorogo* and *Darussalam University Gontor* have a high intensity in using information technology in their daily activities where the majority use technology for 5-8 hours per day. This shows that the use of technology has become part of the activities of lecturers both in carrying out their duties in carrying out the triad of higher education and in their personal lives. Data on the intensity of technology use can be seen in Figure 1.2 below.

Figure 1.1.
 Characteristics of Respondents based on the intensity of technology use



Validity test

The validity test is carried out to find out the validity of the questionnaire used in this study in the sense that the statements contained in the survey used in this study can measure what should be measured validly. The validity of the questionnaire is evidenced by the answers of respondents who are always consistent. Besides, efficacy can also be proven by comparing the calculated r-value with the r table value, where the r computed value must be higher than the r table value.

The sample used in this study amounted to 135, the df value was $135 - 2 = 133$, and the significance value used was 0.05, the r table value of 0.176 was obtained. The full validity test results can be seen in Table 4.1 below.

Table 4.1.
 Validity Test Results

Variable	Indicator	R Calculate	R Table	Description
Technology	X1	0,188	0,176	Valid
Information	X2	0,346	0,176	Valid
Capabilities	M1	0,632	0,176	Valid
IT User	M2	0,632	0,176	Valid
Lecturer	Y1	0,887	0,176	Valid
Performance	Y2	0,912	0,176	Valid

Based on the results of the validity test, it is known that the value of r count is higher than the cost of r table so that it can be concluded that all statement items contained in the questionnaire are valid and feasible to be used in this study.

Reliability Test

The reliability test is carried out to test whether all items in the statement on the questionnaire are reliable or trusted. The second test is done by looking at the Cronbach alpha value. The survey will be declared constant when it has a Cronbach alpha value above 0.60. Based on the reliability test using SPSS aids, the results, as shown in Table 4.2, are obtained.

Table 4.2.
 Reliability Test Results

Variable	Cronbach's Alpha	Criteria	Description
Technology	0,848	0,60	Reliable
Information			
Capabilities	0,915	0,60	Reliable
IT User			
Lecturer	0,893	0,60	Reliable
Performance			

Research result

First regression analysis

Simple regression analysis is used to find out how much influence the independent variable has on the dependent variable. The results of a simple linear regression analysis using SPSS software are shown in table 4.3.

Table 4.3.
Simple linear regression results

Model	Coefficients ^a			t	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
1 (Constant)	8.244	1.787		4.614	.000
Tech.Information	.430	.108	.327	3.987	.000

a. Dependent Variable: Lecturer Performance

Source; Primary Data (processed) 2019

Based on the data in table 4.3. Then it can be described as a simple linear regression equation model as follows;

$$Y = 8,244 + 0,430X_1 + e$$

Simple linear regression equation can be described as follows;

a. Value of constants = 8,244

Regression analysis results obtained a constant value of 8.244 means that when it is assumed that the independent variable (information technology) is in a constant state, the performance of lecturers will still undergo an increase of 8.244.

b. The coefficient value $X_1 = 0.430$

The regression coefficient value obtained by the information technology variable is 0.430, which shows a positive value meaning that when the application of information technology is increased by one unit, it will have a positive impact on improving lecturer performance by 0.430 or by 43%.

The Terminated Coefficient

The coefficient value terminated is the value that indicates the magnitude of the ability of the variable application of information technology in influencing lecturer performance. The results of data processing sourced from simple linear regression calculations using SPSS 21 obtained the results as in table 4.4 below;

Table 4.4.
The terminated coefficient results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.327 ^a	.107	.100	3.60393

a. Predictors: (Constant), Tech.Information

Source: Primary Data (processed) 2019

Based on the data information in table 4.3, it is known that the obtained coefficient value obtained is 0.107 or 10.7%, meaning that the variable application of information technology only has the ability of 10.7% in influencing lecturer performance. In comparison, the remaining 89.3% is controlled by Other variables not used in this study.

Partial Hypothesis Test

T-test was conducted to determine whether the independent variables in this research model have a significant effect on the dependent variable. The single test is done by comparing the calculated t value with the t table, where the independent variable is said to have a significant effect on the

dependent variable when the t value is smaller than the t table value or the significance value is lower than 0.05. T table value obtained for the total sample of 135 with a significance value of 0.05 is 1,978.

Based on the results of simple linear regression the following results are obtained;

Table 4.5.
T-Test Results
Coefficients^a

Model		Coefficients ^a			T	Sig.
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	8.244	1.787		4.614	.000
	Tech.Information	.430	.108	.327	3.987	.000

a. Dependent Variable: Lecturer Performance

Information technology variable has a t value of 3.987, where the value is higher than the t table value of only 1.978 (3.987 > 1.978) and the significance value is 0.000 < 0.05 so it can be concluded that partially information technology has a positive and significant influence on the performance of lecturers.

Multiple Regression Analysis

Results of the second regression analysis using SPSS software are shown in table 4.6. the following

Table 4.6: Multiple Regression Test Results
Coefficients^a

Model		Coefficients ^a			T	Sig.
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	-6.286	7.391		-.851	.397
	Tech.Information	.490	.480	.372	1.022	.309
	TI.Capability	1.295	.457	1.000	2.831	.005
	M	-.028	.029	-.596	-.986	.326

a. Dependent Variable: Lecturer Performance

Source: Primary Data (processed) 2019

Based on the results of the regression, the second regression equation can be described as follows;

$$Y = -6,286 + 0,490X_1 + 1,295X_2 - 0,028M + e$$

The second regression equation can be described as follows;

a. Constants = -6,286

The constant value obtained is -6,286. This value shows a negative value means that when the independent variable is considered constant, then the performance of the lecturer will decrease by 6.286.

b. Regression coefficient variable X₁ = 0.490

The regression coefficient value obtained by the information technology variable is 0.490, meaning that when information technology is improved by one unit, it will have an impact on improving lecturer performance by 0.490 or by 49%

c. Regression coefficient X₂ = 1.295

The regression coefficient value of the variable of the ability of IT users is 1,295, meaning that the ability of IT users has a positive impact on improving lecturer performance, where when the ability of IT users has increased by one unit, it will increase lecturer performance by 1,295.

d. Regression coefficient M = -0.028

The moderating variable regression coefficient value is -0.028, meaning that the interaction between information technology and the ability of information technology users harms performance. An increase in the interaction between

information technology with the ability of users of information technology will have an impact on lecturer performance by 2.8%.

The coefficient is terminated for the second regression

The coefficient value terminated is the value that indicates the magnitude of the ability of the variable application of information technology in influencing the performance of lecturers with the expertise of IT users as moderating variables. The results of data processing sourced from simple linear regression calculations using SPSS 21 obtained the results as in table 4.7 below;

Table 4.7: The second termed coefficient results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.672 ^a	.451	.439	2.84611

a. Predictors: (Constant), M, TI.Capability, Tech.Information

Source: Primary Data (processed) 2019

Based on the data information in table 4.7, it can be concluded that the independent variable in this research model can affect the performance of lecturers by 45.1%. In comparison, the remaining 55.9% is influenced by other variables not used in this study.

Moderation variable hypothesis test

The termination value obtained from the information technology variable on the performance of the lecturer before the moderating variable is 0.107 or 10.7% while after the moderating variable the coefficient value is terminated to increase to 0.451 or 45.1% meaning that the existence of the ability of information technology users will be able to strengthen the relationship of participation in the application of information technology to the performance of lecturers.

Discussion

The effect of the application of Information Technology on Lecturer Performance

Regression analysis results show that the use of information technology has a positive and significant impact on improving lecturer performance, where this is evidenced by the t value obtained by the information technology variable more significant than the t table value ($3.987 > 1.978$) and the significance value is smaller than 0.05 ($0.00 < 0.05$).

These results indicate that the application of information technology will encourage lecturers to be optimal in improving their performance, especially in producing scientific papers publications. The production of lecturers can be measured in their interactions in carrying out the tri dharma of tertiary institutions such as teaching, research, and service, but in this study measuring lecturers' performance based on scientific works that have been successfully published both in terms of the number of scientific works produced and based on their level of success in publishing scientific papers in journals accredited or indexed Scopus or equivalent.

The application of information technology can encourage lecturers to improve their performance in producing scientific works both in terms of quantity and quality of their publications. So that the better the application of information technology will also increase the number and quality of scientific work produced by lecturers.

This is in line with the results of research conducted by Fitriani (2018), who found that the use of information technology has a positive and significant effect on improving employee performance.

The role of the ability of Information Technology users in the effect of the application of information technology on lecturer performance

Statistical processing results show that the strength of technology users has a role as moderation on the impact of the implementation of information technology on the performance of lecturers. This can be seen from the coefficient of determination the effect of the application of information technology on the performance of lecturers before there is a moderation variable is 0.107 or 10.7% while after the moderation variable that is the ability of users of information technology, obtained a coefficient of

determination of 0.451 or 45.1%. This shows that the existence of the variable capacity of information technology users has a role as a moderating variable that reinforces the effect of the application of information technology on lecturer performance.

The better the ability of lecturers to use information technology will be able to strengthen the influence of information technology on lecturer performance so that when the ability to use information technology and the application of information technology increases it will have a positive impact on improving the performance of lecturers in producing scientific papers publications.

E. CLOSING

The results of this study found that the application of information technology has a positive and significant effect on the performance of lecturers in producing scientific papers publications. This shows that the better the use of information technology, the better the performance of lecturers in producing scientific papers publications. Besides, this study also found that the variable ability of lecturers to use information technology was able to moderate the effect of the variable application of information technology on lecturer performance. This study found that the strength of information technology users can strengthen the impact of the implementation of information technology on lecturer performance, meaning that the better the ability of lecturers to use information technology will further enhance or increase the effect of the application of information technology on lecturer performance.