E-Learning Program Adoption: Technology Acceptance Model Approach

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ABSTRACT

Indonesian government has launched e-book for elementary till high school's students as an important part of e-learning program. That program has some impacts both for students and teachers. The aim of this study is to analyze the crucial variables that influence teachers' intention to adopt e-learning program. To achieve the research's objective, the population of the research is teachers in Surakarta and purposive sampling method is chosen as sampling method approach with criterion, first, participants must be the state high school teachers; second, participants have an intention to adopt e-learning program. Based on survey to 243 teachers and also after SEM AMOS applied , the result showed that first, computer self-efficacy and perceived easy of use effect perceived usefulness; second, perceived easy of use and perceive usefulness influence the attitude towards using; finally, perceived usefulness and attitude towards using are predictor variable of intention to use. Overall, Technology Acceptance Model is a good model to investigate the intention to use e- learning for teachers.

Keywords: Technology Acceptance Model, E-learning, e-book.

A. INTRODUCTION

E-learning is a learning model that uses information technology as the main base in enhancing the effectiveness of teaching and learning process (PBM). Adoption of this model requires the readiness of human resources in technology adoption. One model that directly affect the adoption of technology is the Technology Acceptance Model (Davis et. Al., 1989). The development of the model will be followed by the use of models of Davis with two main variables that usefulness and ease of use as the main variable in the Technology Acceptance Model (Davis, 1986 TAM was adopted on the Theory of Reasoned Action (TRA) is emerging and is widely accepted by researchers information systems (Ajzen and Fishbein, 1980).

TRA showed that the intention of the individual in the act preceded by attitude (Ajzen and Fishbein, 1980). Attitudes refer to the individual response to a particular stimulus, the TAM attitude is a response to the stimulus of technology, namely perceived usefulness and perceived ease of use. Although researchers have investigated the information system and replicate TAM, and agreed that the study was valid and can measure a person's acceptance of information technology, the basic design of TAM does not fully describe the specific consequences of the use of technology. Therefore predictor variables needed in TAM. One of these variables is an important external variables that must be considered i n the context of TAM are individual differences, such as computer self-efficacy (Hong et. Al., 2001).

The individual differences,especially in the computer self efficacy, must be taken into account in the E-learning adoption since each individual which is enganged,

is active in getting information, having communication, and interact each other using internet.

E-learning can be applied as desired when the supported devices are available and can be executed. Devices E-learning includes hardware and software. Hardware such as the Internet, computers, monitors and the like. Software includes software applications, expertise and capabilities of human resources.

Ministry of Education and Culture started to apply the E -learning since 2000 and followed by the procurement of hardware, such as computers and Internet network installation which is done gradually. Starting in 2008, the Ministry of Education and Culture makes a purchase copyright of literary books. The books are already available on line on the website (www.depdiknas.go.id) in part E-book, so it is expected to be accessible to all students and teachers in Indonesia.

In addition to the hardware, which is no less important is the readiness of human resources, therefore the Ministry of Education and Culture should examine and evaluate the level of acceptance of the E-learning Master. Human resources' readiness is the key word in the success of the E-learning program, because this program requires great resources (financial) and the changing of mindset which can't be done easily. Mindset changing is absolutely necessary, since the adoption of the technology can't be separated from the formation of attitudes and behavior of users. E-learning promises ease and a variety of other benefits, it must be realized that the level of technological literacy in this country is not high and uneven. Based on these descriptions, the purpose of this research was to examine the relationship variables in TAM applied in the adoption of e-learning in Surakarta, Indonesia.

B. LITERATURE REVIEW & HYPOTHESIS

Computer Self Efficacy

Sam et al. (2005) states that the computer self-efficacy related to an individual's confidence about their computer skills. Computer capabilities (applications and internet) influence attitudes and behavior intention to adopt e-learning, because these capabilities are useful and lead to the ease of using the E-learning applications.

Bandura (1986), Igbaria and Ivari (1995) explains that the computer self-efficacy influences concerns using a computer that also affect perceived usefulness and usage system. Agarwal and Prasad (1999) suggested a positive relationship between the experience of using computers and the diversity of the results of such an influence on computer users and computer usage.

H1: Computer self-efficacy positively affects perceived usefulness.

Perceived usefulness, perceived easy of use, and attitude

Davis (1989) explains perceived usefulness is about individual's perception that using a new system will enhance their performance, while perceived easy of use is personal's believe that a new system will be free effort when it is applied.

Fishbein & Ajzen (1974) describe around attitude where is as an individual's response towards stimulus. This variable is a good predictor for measuring the individual's intention to act.

Agarwal dan Prasad (1999) states that there is a positive correlation between *perceived ease of use* and *perceived usefulness*. Moon and Kim (2001) states that

information technology which is easy to use will reduce user anxiety. Both studies explain that the perceived ease of use positively influences perceived usefulness and attitude towards using.

H3: *Perceived ease of use* influences positively to *perceived usefulness*.
H4: *Perceived ease of use* gives positive influences to *attitude towards using*.
H5: P*erceived usefulness* influences positively to *attitude towards using*.

Intention

Ajzen & Fishbein (1969); Ajzen, Czasch, & Flood (2009); Conner & Armitage (1998) state that intention is a person's motivation in the sense of their conscious plan to exert effort to behavior. Thus, intention predicts the individual behavior to act better than others.

The research in IS *community* is also stated that there is a positive correlation between *perceived usefulness* and *usage intention* (Agarwal and Prasad, 1999). Davis, Bagozzi dan Warshaw (1989) states that wish to use is influenced by consumer attitudes towards its use.

H6: Perceived usefulness positively affects behavioral intention.
H7: Attitude towards using influence the behavioral intention to use

The framework that describes the relationship between computer self-efficacy against the attitude towards using and behavioral intention to mediation perceived usefulness, perceived ease of use are as follows:

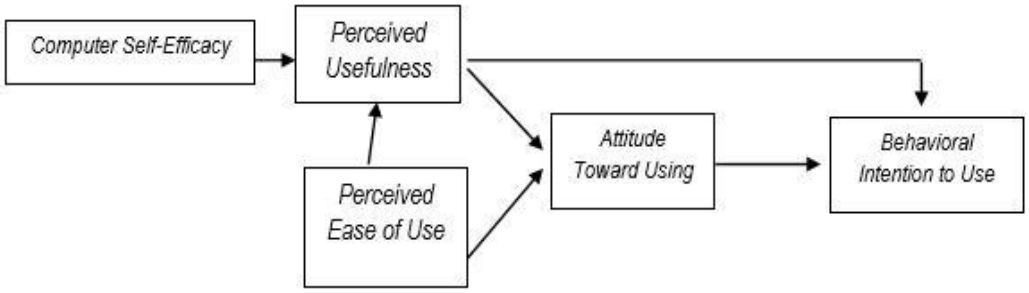

Figure 1: Research Model

Research model adopted from TAM (Davis, 1988) with the construction of computer self- efficacy variable as external variables TAM (Sam, Ekhsan, Othman, & Nordin, 2005). Figure 1 illustrates that the individual intentions in the adoption of technologies established through internal factors (attitude) and external factors (perceived easy of use and perceived usefulness).

C. METODOLOGI

1. Research Design

This research was causal, studies conducted to explain the relationship between variables that determine the value of one cause or another variable (Ghozali, 2005). This study was a survey.

2. Population

Population refers to a whole people, events, or things of interest to be observed (Sekarang, 2006). The study population was educators (teachers) in Surakarta.

3. *Sampling Method*

The sample is part of the population that is considered to represent the population. The study was conducted with a sample, there are so many population so it is difficult to conduct a study of all members of the population. The sampling method in this research is purposive sampling, ie sampling with specific criteria. Criteria sample in this study is a high school teacher in Surakarta. Determination of State High School Teacher with the consideration that: The teacher concerned to work with the same relative infrastructure; besides, the Depth level of knowledge is higher than junior high school or elementary school so the need for internet browsing as well as a source of material enrichment is higher.

4. Variable Measurement.

The scale of this research is the scale interval with a 5-point Likert. Interval scale is used to determine the difference, order, similarity magnitude differences in variables (Sekaran,

2006: 19). Consisting of (1) Strongly Disagree <STS>, (2) Disagree <TS>, (4) Agree <S>, (5) Strongly Agree <SS>.

5. Data Analysis

The analytical method used in this study applies Structural Equation Modeling (SEM) using the software Analysis of Moment Structure (Amos) Release 4. SEM is a technique that combines aspects Multivariate multiple regression and factor analysis to estimate a series of dependency relationships simultaneously (Hair et. al., 1998).

D. FINDINGS AND DISCUSSION

1. Hypothesis Testing

Testing the hypothesis is based on the value of CR (z-count) which is greater than or equal to the value of z-tables (z-count ≥ z-tables). Z-value table for each level of significance is as follows:

Table I: Output of SEM

Description	***Unstandardized Estimate***	***Standardized Estimates***	***CR***
Perceived Usefullness <--- Computer Self-Efficacy	0.624	0.32	3.353
Perceived Usefullness <--- Perceived Ease to Use	0.424	0.406	4.975
Attitude Towards Using <---Perceived Usefullness	0.674	0.75	11.407

Attitude Towards Using <---Perceived Ease to Use	0.216	0.229	4.441
Behavioral Intention <---Attitude Towards Using	0.397	0.447	3.609
Behavioral Intention <---Perceived Usefullness	0.267	0.334	2.629

The table illustrates that:

a. The effect of *computer self-efficacy to perceived usefullness*
H1: Computer self-efficacy positively affects perceived usefulness.
Based on the value of CR, which is equal to 3.353 it was concluded that there are positive influence of computer self-efficacy against perceived usefullness. Hypothesis 1 received at a significance level of 1%.

b. The effect of *perceived ease to use* to *perceived usefullness*
H3: *Perceived ease of use* provide positive influences against *perceived usefulness*.
Based on CR value which is 4.975, it can be concluded that there is a positive influences of *Perceived ease of use against perceived usefullness.* Hypothesis 3 received at a significance level of 1%.

c. The effect of *perceived ease to use* and *perceived usefullness* to *attitude towards using*
H4: *Perceived ease of use* affects positively against *attitude towards using*.
Based on CR value, which is 4.441, it can be concluded that p*erceived ease of use* affects positively against *attitude towards using.* Hypothesis 4 is received at a significance level of 1%.
H5: P*erceived usefulness* affects positively against *attitude towards using*.
Based on CR value, which is 11.407, it can be concluded that *perceived usefulness* affects positively against *attitude towards using.* Hypothesis 5 is received at a significance level of 1%.

d. The effect of a*ttitude towards using and perceived usefullness* to *behavioral intention*
H6: *Perceived usefulness* affects positively against *behavioral intention*.
Based on CR value which is 2.629, it can be concluded that *perceived usefulness* affects positively against *behavioral intention.* Hypothesis 6 is received at a significance level of 1%.
H7: *Attitude towards using* affects positively against *behavioral intention to use*
Based on CR value which is 3.609, it can be concluded that *attitude towards using* affects positively against *behavioral intention to use.* Hypothesis 6 is received at a significance level of 1%.
Hypothesis 1 is received at a significance level of 1%.

2. Discussion

Perceived ease of use of internet technology adoption in e-learning influence the perception of the usefulness of e-learning program for someone. Someone who felt that the use of e-learning program is easy, it is concerned that he is also able to understand the benefit of the program.

Perceptions about the ease and usability of e-learning program for a person turns positive influence on the attitude to use e-learning program. Someone assess e- learning program for the concerned feel that the program is easy and useful. Of these perceptions are formed attitude to use e-learning program.

Furthermore, a positive attitude towards e-learning programs affect the intention to use e-learning program. On the other hand, turned out to be the intention to use e - learning program is also influenced directly on the perception of usefulness, but based on the amount of the value of CR, intention of using e -learning program was formed through the variable attitude towards using or attitudes to use e-learning program.

E. CONCLUSIONS & RESEARCH LIMITATIONS

1) CONCLUSION

The analysis showed that:

a. Computer capability has positive influence on the perception of the usefulness of e- learning program.
b. Perceived ease of use influences the perception of usefulness and attitude of using e-learning program.
c. Perception of usability affects on the attitudes toward the use of e-learning program.
d. Attitudes toward the use of e-learning program was formed through the perception of usability and easy of use perception of e-learning program.
e. Intention to use e-learning program established through attitudes toward the use of e-learning program

2) THE RESEARCH LIMITATION

This study only tested the model on the level of user intent, has not tested the actual act. Therefore, further research is recommended to expand the research on the level of actual actions use e-learning program. In addition, further research would be better to widen the scope of the respondents, namely students. The hope is that the obtained results more adequate in assessing the program e-book (e-learning) launched the national Department of Education.

REFERENCES

Agarwal, R. and Prasad, J. (1999),"Are individual differences germane to the acceptance of new information technologies?", *Decision Sciences*, Vol.30 No.2,pp.361-91

Agarwal, R. Sambamurthy, V. and Stair, R.M. (2000), "research report: the evolving relationship between general and specific computer self efficacy – an empirical assessment", *Information System Research*, Vol.11 No., pp.418-30

Ajzen, I and Fishbein, M (1980), *Understanding Atitudes and Predicting Social Behavior*, Prentice-Hall, Englewood Cliffs, NJ.

Ajzen, I., & Fishbein, M. (1969). The Prediction of Behavioral Intention in a Choice Situation. *Journal Of Experimental Social Psychology*, *5*, 400–416.

Ajzen, I., Czasch, C., & Flood, M. G. (2009). From Intentions to Behavior : Implementation Intention, Commitment, and Conscientiousness. *Journal of Applied Social Psychology*, *39*, 1356–1372.

Ba, S. 2001, Establishing Online Trust Through A community Responsibility System. *Decision Support System*, 31, 323-336. June 28, 2005.http//www.cos.ufjr.br/~jano/ CSCW2004/onlinetrust.pdf

Brown, T.J. 2002. *Individual and Technological Factors Affecting Country*, The Electronic Journal on Information Sytems in Developing Countries, http://www.ejisdc.org.

Conner, M., & Armitage, J. (1998). Extending the Theory of Planned Behavior : A Review and Avenues for Further Research. *Journal of Applied Social Psychology*, *28*(15), 1429–1464.

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease Of Use, And User Accep. *MIS Quarterly*, (September), 319–340.

Davis, F.D. (1989), "Perceived usefulness, perceived ease of use and user acceptance of information technology", *MIS Quarterly*, Vol. 13 No.3,pp.318-39

Fishbein, M., & Ajzen, I. (1974). Attitude Toward Objects As Predictors of Single and Multiple Behavioral Criteria. *Psychological Review*, *81 No.1*, 59–74.

Ghozali, I and Fuad. 2005. *Struktural Equation Modelling*. Semarang: Badan Penerbit Universitas Diponegoro.

Hair, J.T., Anderson, R.E., Tatham, R.L. and Black, W.C (1992) *Multyvariate Data Analysis with Readings*, 3rd ed., Macmillan, New York, NY.

http://www.depdiknas.go.id/ diakses 30 Juni 2008

Leong, Leslie.2001. *Theoritical Models in IS Research and The Technology Acceptance Model (TAM)*, Information system Research, www.brint.org/technologyacceptance.pdf

Sam, H. K., Ekhsan, A., Othman, A., & Nordin, Z. S. (2005). Computer Self-Efficacy, Computer Anxiety, and Attitudes toward the Internet : A Study among Undergraduates in Unimas Purpose of the research. *Educational Technology & Society*, *8*, 205–219.