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***Analysis of Behaviour of E-learning Users
by Unified Theory of Acceptance and Use of Technology (UTAUT) Model
A Case Study of Vocational Education in Halu Oleo University***

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Abstract

E-learning (EL) as a supporting tool in learning process has increasingly developed because the implementation of the tool will be helpful for both lecturers and students to be more interactive in delivering materials and to evaluate learning outcomes. Analysis of the user's behavior was required to measure the success rate of the implementation of e-learning. One of the models used in the present study was Unified Theory of Acceptance and Use of Technology (UTAUT). The model was designed to explain the behavior of the users on the information technology. The main variable was behavioral intention with four elements namely performance expectancy, effort expectancy, social influence and facilitating conditions. Data were collected randomly from the students of vocational education, university of Halu Oleo by distributing questioners to the e-learner users. The data were then validated and analyzed using regression analysis. The results showed EL affected the behavioral intention, performance expectancy, effort expectancy, social influence and facilitating conditions.

Keywords: E-learning, Unified Theory of Acceptance and Use of Technology (UTAUT)

Abstrak

Analisis Perilaku Pengguna E-learning oleh Unified Theory of Acceptance and Use of Technology (UTAUT) Model Studi Kasus Pendidikan Kejuruan di Universitas Halu Oleo. E-learning (EL) sebagai alat pendukung dalam proses pembelajaran semakin berkembang karena penerapan alat ini akan sangat membantu bagi dosen dan mahasiswa untuk lebih interaktif dalam menyampaikan materi dan mengevaluasi hasil belajar. Analisis perilaku pengguna itu diperlukan untuk mengukur tingkat keberhasilan pelaksanaan e-learning. Salah satu model yang digunakan dalam penelitian ini adalah Unified Theory of Acceptance and Use of Technology (UTAUT). Model ini dirancang untuk menjelaskan perilaku pengguna pada teknologi informasi. Variabel utamanya adalah niat perilaku dengan empat elemen yaitu harapan kinerja, harapan kerja, pengaruh sosial dan kondisi fasilitasi. Data dikumpulkan secara acak dari siswa pendidikan kejuruan, universitas Halu Oleo dengan membagikan kuesioner kepada pengguna e-learner. Data kemudian divalidasi dan dianalisis dengan menggunakan analisis regresi. Hasilnya menunjukkan EL mempengaruhi niat perilaku, harapan kinerja, harapan kerja, pengaruh sosial dan kondisi fasilitasi.

Kata Kunci: E-learning, Unified Theory of Acceptance and Use of Technology (UTAUT)

INTRODUCTION

The development of technology and communication nowadays demands an intense collaboration between technology and education. The existence of electronic learning, popularly known as e-learning, has become an option for institutions to support learning process not to mention in vocational education in Halu Oleo

University, particularly for students in diploma III majoring in electronic. According to Michael (2013:27) E-learning is a course designed based on electronic or computing system to support learning process. Chandrawati (2010) explained that e-learning is a by distance learning process which combines the principle of course and technology.

In terms of the implementation, e-learning has benefits and drawbacks. The benefits gained from e-learning are to provide flexibility, interactivity, speed, visualization through the superiority of each media (Sujana, 2005), while the drawbacks from e-learning are deficient interaction between teachers and students or in fact among the students and the internet facilities are not necessarily available in every place. The benefits and drawbacks influence the success of the implementation of e-learning in an institution. Therefore, it is important to carry out an analysis to measure the level of success and also the behavior of E-L users

Unified Theory of Acceptance and Use of Technology (UTAUT) is a model used to analyze how the success rate of EL users. The model is the adoption of technology in the last users, and it is proven to be more successful model compared to the others. UTAUT composed of four essential elements: worker expectation, effort expectation, social factor and facilitated condition. The model is influenced by moderating variables such as age, gender, experience, and voluntary of use (Venkatesh et al, 2003).

The purpose of the present study was to analyze the behavior of EL users to find out whether or not the implementation of EL is well accepted by the last users.

MATERIALS AND METHODS

E-learning

Ardiansyah (2013) came up with the definition of E-learning (EL) that a system used to deliver course without the need to attend the classroom or to make face-to-face interaction between lecturers and students. There are many applications, software and web based e-learning available, and one of the applications used by the researchers was e-learning edmodo, which is available in <http://edmodo.com>. This system was selected for several features such as: Polling, polling is a feature which is exclusively used by lecturers. The feature is designed to see how the response of the student to particular things. Gradebook, this feature makes lecturers possible to manage the evaluation of learning outcomes from all students. The evaluation can be exported into file.csv.

Lecturers take full control over this feature, while students can only see the recap of score in the form of graphs and direct evaluation. Quiz, this feature can only be created by lecturers, while students are not able to access to create a quiz. The students can only complete the quiz created by lecturers. Quiz is used by lecturers to give online evaluation to students in the form of multiple choices, short and long essay. File and links, this feature has function to send notes and file attachment and links. The files are normally in the form of .doc, .ppt, .xls, .pdf and so forth. Library, the function of the feature is to upload teaching

materials such as presentation, pictures, video, source of references, and so forth in order to be accessed to student.

Assignment, this feature is used for lecturers to give online assignments to students. The superiority of the feature is it is equipped with deadline, attached file which enable the students to send assignments directly to the lecturers in the form of file documents (pdf, doc, xls, ppt.), and also the turn in” button” in the assignment has function to indicate that students have finished their assignments. Award Badge, the feature is meant to give an appreciation to students or group. Normally this feature is utilized by lecturers. Parent Code, this feature is helpful to parents to be able to monitor the learning activities of their children. To get the code, the parents can click the class or group of their children in Edmodo or they can also get directly from the lecturers.

UTAUT, The Unified Theory of Acceptance and Use of Technology (UTAUT) is a model of acceptance of a technology or information system developed by Venkatesh et al.

The following chart is an illustration of the relation among behavioral intention, use behavior, performance expectancy, effort expectancy, social influence, facilitating conditions, gender, age, experience, and voluntariness within UTAUT.

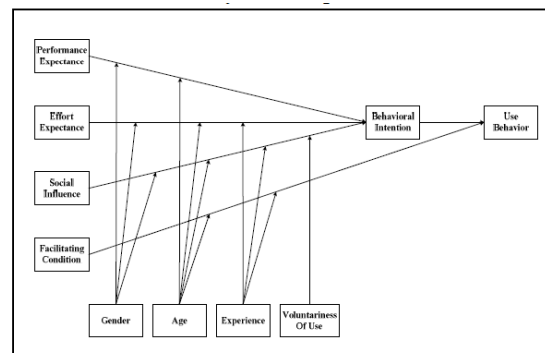


Figure 1 Model of UTAUT
Source: Venkatesh, et al. (2003)

The present research used UTAUT model that had been modified in such a way that it became simpler as previous study by Dasgupta et al., in Sedana and Wijaya (2010).

In simplified UTAU model, some variables can be explained as follows: Performance Expectance, the level of confidence of an individual is depended upon how far the use of system will help him to benefit from their work. Effort Expectance, it is the level where the expectance relates to the use of the system. Social Influence, it is a level where an individual perceives that the important person for them believe that he use the latest system. Facilitating Condition, it is the condition where an individual is

affected by the availability of technical infrastructure and management to back up the use of the system. Venkatesh, dkk. (2003) referred to Sedana and Wijaya (2010)

The four determinants have important roles and directly affect the behavioral intention and user behavior.

METHOD

Variables or instrument in the study were UTAUT consisting of independent variables: Performance Expectancy (PE), Effort Expectancy (EE), and Social Influence (SI) and Facilitating Conditions (FC), and dependent variables: Behavioral Intention (BI) and Use Behavior (UB).

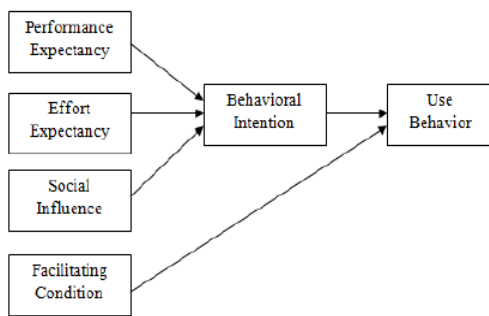


Figure 2 Simple UTAUT model (Source: Sedana and Wijaya (2010))

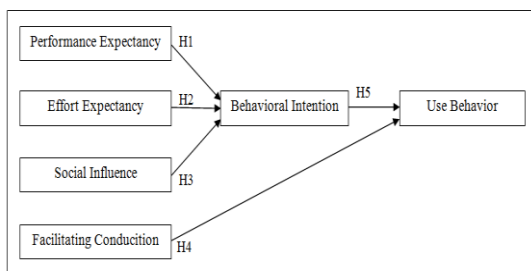


Figure 3. UTAUT model as a model of research variable

As shown in figure 3, the researcher came up with the following hypothesis

Tabel 1. Research Variable

Variable	Code/Path
Performance expectancy affected behavioral intention	H1
Effort expectancy affected behavioral intention	H2
Social influence affected behavioral intention	H3

Facilitating condition affected use behavior	H4
Behavioral intention affected use behavior	H5

Table 2 Research Instrument

Response	Abbreviation	Score
Strongly disagree	SDA	1
Disagree	DA	2
Neutral	N	3
Agree	A	4
Strongly agree	SA	5

All used scale was evaluated using a Likert scale consisting of five points: strongly disagree, disagree, neutral, agree, and strongly agree. The instrument used in the research (Scale UTAUT) was developed from research instrument Venkatesh et al. The instrument is presented in table 2.

In the present study, respondents were the students of vocational education Diploma III Electric concentrated on computer technology which consisted of 116 students. Data were collected by filling out online questioner. From the questioner, the valid data were 112 that were managed to be analysis.

Linear regression method was used to analyze the collected data. The method was statistics which allows the researcher to examine how far the relationship between two continues variables, which is independent (X) and dependent (Y) variables.

X = Predictor variable or Independent variable as presented in table 3

Table 3 Associated Variables

Independent Variables (X)	Dependent Variables (Y)	Hypothesis	Code/Path
PE	BI	PE → BI	H1
EE	BI	EE → BI	H2
SI	BI	SI → BI	H3
FC	UB	FC → UB	H4
BI	UB	BI → UB	H5

RESULT AND DISCUSSION

Data collected from questioners were analyzed and presented in table 4. The regression equation used was $Y' = a + bX$:

Table 4 Data Collection (questioner)

Variables	(Σx)	(Σy)	(Σxy)	(Σx ²)	(n)
PE → BI	499	509	2292.67	2256.56	112
EE → BI	515.7	509	2366	2393.22	112
SI → BI	511	509	2342.67	2359.33	112
FC → UB	504	507	2302.11	2293.78	112
BI → UB	509	507	2331	2351	112

Source = Data processing 2016

From table 4, the value of constant was calculated using the following equation:

Calculate constant (a) PE → BI

$$A = \frac{(\sum y) (\sum x^2) - (\sum x) (\sum xy)}{n(\sum x^2) - (\sum x)^2}$$

$$A = \frac{(509)(2256.56) - (499)(2292.67)}{112(2256.56) - (499)^2}$$

$$A = 1.2177$$

Coefficient Regression (b)

$$B = \frac{n(\sum xy) - (\sum x)(\sum y)}{n(\sum x^2) - (\sum x)^2}$$

$$B = \frac{112(2292.67) - (499)(509)}{112(2256.56) - (499)^2}$$

$$B = 0.7467$$

Thus, the linear regression used was:

$$Y' = 1.2177 + 0.7467X$$

Meanwhile, the R value was determined using the following equation:

$$R = \frac{n(\sum xy) - (\sum x)(\sum y)}{[n(\sum x^2) - (\sum x)^2]^{1/2} [n(\sum y^2) - (\sum y)^2]^{1/2}}$$

$$R = 0.7015$$

From the results, R value was 0.7015, meaning that the initial hypothesis that performance

expectancy affected behavioral intention was accepted.

The following test was to examine the association between dependent and independent variables. The results were presented as follows:

The result from R multiple program was 0.701419 and the results was the same as the calculation 0.7015. Multiple R is a parameter to measure the level of linear relationship between associated variables with independent variables simultaneously. Meanwhile, ANOVA was run to analyze the model of acceptability from the perspective of statistic. Sum of square (SS) indicated that total value and regression that reached $33.33234/16.39912 = 0.4921988$. The result was the same as R square in statistic regression as shown above, where it was in the range of 0-1. Therefore, the PE assumption to BI was accepted.

Based on the result above, the same method was used to measure the following variables, and the results were presented in table 6.

Table 5 Summary Output PE → BI

Regression Statistics	
Multiple R	0.701419
R Square	0.491988
Adjusted R Square	0.48737
Standard Error	0.39235
Observations	112

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	16.39912	16.39912	106.53047	7.13533E-18
Residual	110	16.93322	0.153938		
Total	111	33.33234			

Table 6 Summary Output EE → BI

Regression Statistics	
Multiple R	0.838903
R Square	0.703758
Adjusted R Square	0.701065
Standard Error	0.226247
Observations	112

Table 7 Summary Output SI → BI

Regression Statistics	
Multiple R	0.639708
R Square	0.409226
Adjusted R Square	0.403856
Standard Error	0.407615
Observations	112

Table 8 Summary Output FC → UB

<i>Regression Statistics</i>	
Multiple R	0.685826
R Square	0.470357
Adjusted R Square	0.465542
Standard Error	0.352304
Observations	112

Table 9 Summary Output BI → UB

<i>Regression Statistics</i>	
Multiple R	0.751513
R Square	0.564772
Adjusted R Square	0.560816
Standard Error	0.386611
Observations	112

From the result of Table 6, R value is 0.838903 indicating initial hypothesis that effort expectancy affected behavioral intention is accepted.

From the results of Table 7, R value is 0.639708 meaning that the initial hypothesis that social influence affected behavioral intention, even the associated value is lower than other variables.

From the result of R value 0.685826 in Table 8, it indicates that early hypothesis that the effect of facilitating condition influenced behavior of the users, even though the related value is lower compared to other variables.

R value at Table 9 was 0.751513, meaning that the initial hypothesis that effect of behavioral intention and effort expectancy on use behavior was accepted.

CONCLUSION

In conclusion, all the initial hypothesis there was strong relationship between the behavior of EL users with Performance expectancy affected

behavioral intention and behavioral intention and effort expectancy affected the user behavior, while less influence in comparison with other variables was found in social influence, in which the variable affected behavioral intention and facilitating condition affected user behavior. It means that social factor and facilitation highly influence the level of acceptance and success of e-learning application.

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