The Use of Technology of Acceptance Model (Tam) to Recognize the Graduate Students' Behaviours in Using Sistem Akademik Terpadu (The Integrated Academic System/ Sikadu)

Murwatiningsih and Arief Yulianto

Faculty of Economics, Semarang State University, E-mail: ariefyulianto@mail.unnes.ac.id

Abstract: The purpose of this study is to figure out the influences of perceived usefulness and perceived ease to use on intention to use and actual use of technology. The samples are 50 graduate students of Semarang State University(UNNES). The research results show that perceived of ease to use does not either directly or indirectly influence actual use of technologythrough intention to use. However, perceived usefulness shows the opposite results. Perceived usefulness has no influence because (a) the graduate students havea goodmastery on computer applications and (b) they are required tocontinuously use SIKADU. Further researchesare expected to input self-efficacy and Post Graduate Programs management.

Keywords: TAM, SIKADU, behaviors

INTRODUCTION

Davis (1989) developsTechnology of Acceptance Model (TAM) based on a theory of behaviors developed by Ajzen (1980) in Theory of Reasoned Action (TRA) and Ajzen (1988) in Theory of Planned Behavior (TPB). TRA and TPB Model explain factors influencing individual behaviors, while TAM developsindividual behaviorsin the use of technology.

While Ajzen (1980) in Theory of Reasoned Action (TRA) explains that an individual's decision in performinga behavior is based on attitude (attitude towards behavior) and subjective norms. Attitudetowardsbehavior based on individual'sbeliefson behaviorswhile subjective norms are based on beliefs coming from the social norms.

The perceptions of individual beliefs and social norms may not always encourageattitude towards behavior and subjective norms because an individual may evaluate resources in performing his behaviors. Thus, Ajzen (1988) developsTPB model which is derivedfrom TRA byaddingbeliefs in perceived behavioral control.

Davis (1986) develops TAM model derived from TPB within the framework of technological use. TAM uses TPB beliefs and TRA attitude to explain individual's behaviors in using technology. Individual's beliefson ease and usefulness of information system may encourage behavioral attitudes which further may influence interests or intentions. Furthermore, the intention may influence behaviorsin using the technology. Based on previous studies, TAM Testing is conducted using different models.For example,Praveena and Thomas (2013) include satisfaction variable to explain behavior on the use of Facebook. Next, Nair and Das (2012) eliminate attitude variable to explainteachers' behavior in using technology. Then, Park (2009) adds self-efficacy and accessibility system variable as well as organizational factors. Aristiyan*et al.* (2016) eliminate attitude and intention to use to explain behavior on the use of e-learning.Pujastuti*et al.* (2014) add safety factors to explain individual's behavior on e-commerce purchases.

This study developsa model of Nair and Das (2012) withouta relationship between easiness and usefulnessperceptions. A system should be built based on usersdue to the easiness and usefulness perceptions. Easiness may not beperceived by the users that this program is useful.

SIKADUis an Integrated Academic System at Semarang State University, including for Graduate Programs. Sikadu is a web-based information system built withthe goals of organizing online academic data atUniversitas Negeri Semarang. The data organization includes managements of registration system,lecturing schedules system, Study Planning Card (KRS), courses monitoring, students' scores organization, and graduation registration services.

Haryadi (2009) revealed the research results ofthe use of SIKADU on students of Indonesian languagestudy program have both positive and negative impacts. The negative impact is that students frequently face the full class problemsthat they cannot join those courses because the course credits they have input are lost. Based on TAM, a system should be easy to use and useful.

Therefore, this research is conducted based on (a) differences of TAM model with those in the previous studies (b) result differences that are empirically found on a system perceived easy to use and useful.

LITERATURE REVIEWS

1. TAM Model

A theory of TAM shows that the individual's behavioraldesire to use this technology is determined by two beliefs: (a) perceived usefulness, which is defined that an individualmay feel confident because whenever he uses the system, his job performance may improve better. The measurement of these benefits is based on frequency of the uses and variety of the operated technologies. Someone may use itas they know the positive benefits on the use of information technology.And(b) perceived ease of use, which is defined that anindividual may feel confident using the system if itiseffortlesslyoperated.

Their perceptions on easiness and usefulness of technology may encourage their interest (intention) to use it which further may influence their behaviors in using the technology.

1.1. Perceptions of Easiness (Perceived of usefulness)

The usefulness of information technology uses may be figured out from the beliefs or perceptions of information technology users who decide to use the information technology. Beliefs or perceptionson

technology may encourage their interest in using technology (Aristiyan*et al.*, 2016; Nair and Das, 2012). Thus, the formulation of hypothesis 1 (H1) is **the perceptions of usefulness influence the interest of using technology (intention to use).**

Hamrul et al. (2013) explains that perceptions of users onusefulnessmay encourage them touse technology (actual to use). Thus, hypothesis 2 (H2) may be formulated as**perceptions on usefulness influence behaviorsto use (actual to use).**

1.2. *Perceptions on Easiness(perceived ease to use)*

Ease of use is a level in which an individual believes that a system is used because it is easy to understand and to use thatgreat efforts or attemptsare no longer required. A belief oneasy to use system may encourage interest in using it (Praveena and Thomas, 2013; Nair and Das, 2012). Thus,hypothesis 3 (H3) may be formulated as**perceived ease to use influences intention to use**

Hamrul*et al.* (2013) explains that perceptions of users on system easinessmay lead to behaviors to usethe technology (actual to use). Thus, hypothesis 4 (H4) may be formulated as **perceptions on easiness influence the perceived ease of use (actual to use)**

1.3. *Behavioral Interests (intention to use)*

Intention or interest is explaining the purposes of an individual to perform a variety of behaviors and may be considered as special reasons against beliefs (perceived). Nair and Das (2012) and Davis (1993) explain that behavioral interest is the basis for an individual to take actions on using the technology.

Thus, hypothesis (H5) may be formulated as**behavioral interest influences behaviorsin usingthe technology.**

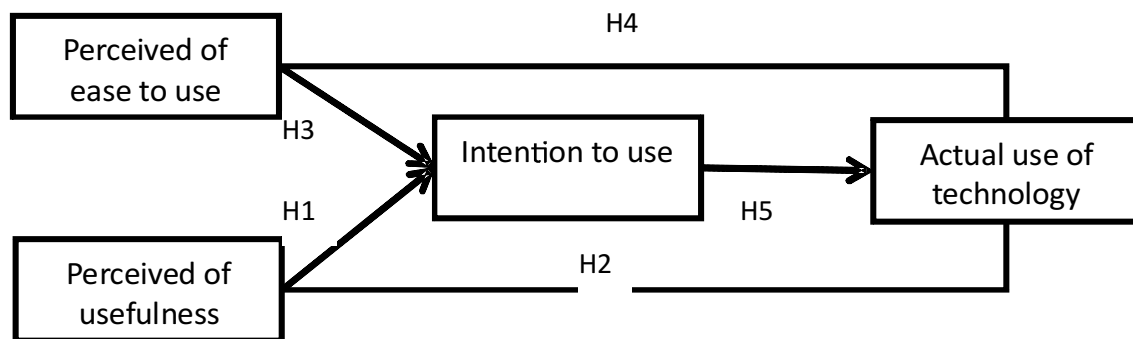Based on the explanations above on the relationship between variables, may be described as follows:

Figure 1: A Theoretical Model

RESEARCH METHODS

This research used a quantitative approach withexplanations to explain factors influencing the actual use of technology. The primary data were 50 graduate students of Universitas Negeri Semarang. The data were collected using questionnaires based on their study programs that sampleswere evenly

distributedrepresenting all Graduate students of Universitas Negeri Semarang. The data of graduate students based on their study programswere:

Table
Data of Graduate Students based on Study Programs

Study Program	Frequency (Percent)	Study Program	Frequency (Percent)	Study Program	Frequency (Percent)
Counseling	4 (8%)	Management Education	4 (8%)	Physics Education	1 (2%)
Economics	1 (2%)	Languages Education	1 (2%)	Non-formal Education	1 (2%)
Public Health Scieces	3 (6%)	Languages Education	3 (6%)	Mathematics	4 (8%)
Natural Sciences	5 (10%)	Primary Education	5 (10%)	Physical Education	5 (10%)
Social Sciences	1 (2%)	Economics Education	2 (4%)	Arts Education	3 (6%)
Curriculum and	1 (2%)				
Education Technology	1 (2%)			Educational Research and Evaluation	

Before hypothetical testing, data quality testing is conducted through validity and reliability testing

Table: Validity and Reliability Testing

Variable	Validity Testing			Reliability Testing		
	Corre-lation Coef.	Sig.	Descri-ption (10%)	Cron-bach	Limit	Ket
Easiness						
Having no problems in accessing *Sikadu*	0.977	0.004	Valid	0.788	0.6	Reliable
Easiness to get Information from *Sikadu*	0.963	0.008	Valid	0.936	0.6	Reliable
Appearances (colors, fonts) do not interfere the substantial menu of *Sikadu*	0.961	0.009	Valid	0.900	0.6	Reliable
Language use in the menu of *Sikadu*is easy to understand	0.692	0.195	Not valid			Not reliable
Usefulness						
Improving learning quality by obtaining learning materials or academic information	0.963	0.008	Valid	0.800	0.6	Reliable
containing lectures information and academic supports	0.963	0.008	Valid	0.800	0.6	Reliable
knowing learning results			Not valid			Not reliable
Supporting the implementations of academic assignments	0.843	0.073	Valid	1.000	0.6	Reliable

contd. table

Intention/Interest on uses						
Encouraging Intention to access Sikadu in order to obtain academic information	0.585	0.300	Not valid			Not reliable
Encouraging friends' intention to access Sikadu in order to obtain academic information	0.967	0.007	Valid	0.947	0.6	Reliable
Having no motivation to use *Sikadu*, I preferhaving offline consultation with Post Graduate Program's lecturersor administration staffs	0.961	0.009	Valid	0.848	0.6	Reliable
Sikadu puts me in difficulties that I have no intention to use it	0.892	0.042	Valid	0.929	0.6	Reliable
Behaviors on uses						
Using Sikadu to obtain academic information and administration	0.967	0.007	Valid	0.933	0.6	Reliabel
Routinely using Sikadu not only at the beginning and at the end of semester	0.848	0.071	valid	0.889	0.6	Reliable
Using Sikadu at Post Graduate Program of UNNES because it make the academic process easier to do	0.967	0.007	Valid	0.824	0.6	Reliable
To routinely obtain the academic information and administration	0.721	0.170	Not valid			Not reliable

The data were analyzed using hypothetical testingwith two-tailed t testbased on the previous empirical model. The theoretical equation model is:

$$Y_1 = \beta_1 X_1 + \beta_2 X_2 \qquad\qquad\qquad\text{(i)}$$

$$Y_2 = \beta_1 X_1 + \beta_2 X_2 \qquad\qquad\qquad\text{(ii)}$$

$$Y_2 = \beta_1 Y_1 \qquad\qquad\qquad\text{(iii)}$$

Where X1 isperceived ease to use, X2 is perceived usefulness, Y1 is intention to use, and Y2 is actual use of technology

## FINDINGS AND DISCUSSIONS

Descriptions of Data

Table
Description of Respondents

Have already takensubjects /coursesoncomputer applications in the previous educational levels	
Yes	94%
No	6%
Doing e-registrationon Sikadu	
Independently	92%
With friend's assistance	8%

contd. table

Menu accessed on Sikadu	
Academic	82%
GeneralandAcademic	16%
others (seminar)	2%
Frequency ofaccessing Sikadu	
Everyday	20%
More than twice a week	38%
More than 5 times a month	26%
others (rarely)	16%

The results of hypothetical Testing are:
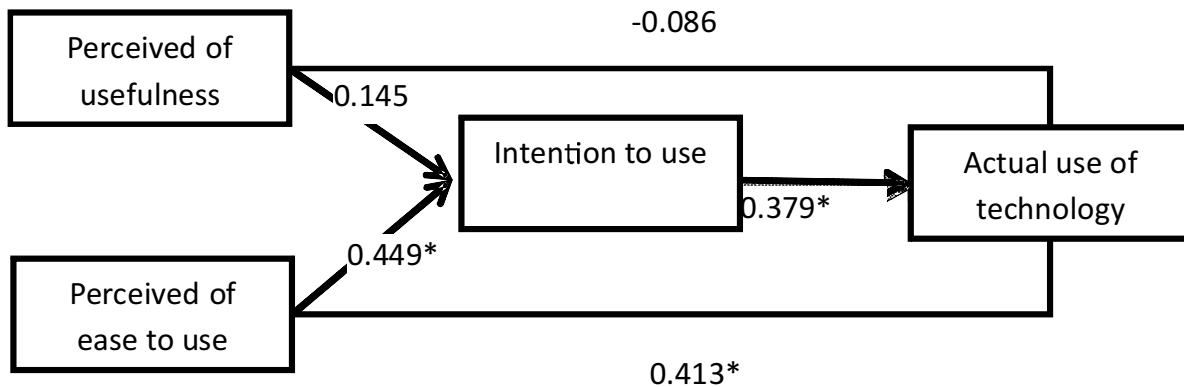
The hypothetical results show that perceptions of easiness on *Sikadu*do not significantly influence intention of students either directly or indirectly to use *Sikadu*. However, perceptions of usefulness of sikadudirectly and indirectly influence intention of students to use *Sikadu*. The perceptions of usefulness have direct influence on the use of Sikadu by 41.3% and indirect one by 17.01% (0.449 x 0.379). However, easiness variable does not influence the uses of Sikadu either directly or indirectly.

This research result does not support TAMmodel (Davis, 1993) due to the difference on subjects. The subjects used by Davis are organizations on software system, electronic mail, text editor while this research uses students in using academic information system.

Some researches supporting this research finding are including a research conducted by Park (2009) on 628 students of various Universities in Korea.The research findings show that due to the perceptions of students, the use of e-learning is not easy. However, the students are required to use it in learning processes. Thus, like it or not, they have to access it. Aristiyan*et al.* (2016) conducts a research on students of Atmajaya Yogyakarta, Indonesia. The research findings show that the easiness factor does not influence the electronic learning system (e-learning).

The use of information technology is different with that in trading, such ase-commerce, due to the high competitions between producers. The company should pay attention to the services provided to costumers that they may easily access the intended websites on e-commerce. Thus, the higher the intention

on and the use of a websitethe more improving the transactions will be. In e-commerce, the costumers have more priorities on security (Pujastuti*et al,* 2014).

Similarly to the use of banking services, the banks should design a banking system (e-banking) to accommodate easiness and security of costumers (Ahmad and Pambudi, 2014).

The research results show thatfor students,the easiness factor does not influence intention or interest to use information system due to the following causes:

1. Internal factors, includingstudents' high confidence that they do not find it difficult to use a system.The research result descriptions show that more than 90% of users (UNNES Graduate Students) have obtained materials on computer in the previous educational levels.

2. External factors includethe students' needs to interact with academic system.Although the minority users (less than 10%) have low computer mastery, they have to access the internet due to the necessitywith their friends' assistance,for example during registration time. Since they are unable to do online registration by themselves, they prefer to have the offline one with the academic administration staffs.

Contributions for TAM on the use of academic administration are different with those in business sectors that the model found is different, as follows:
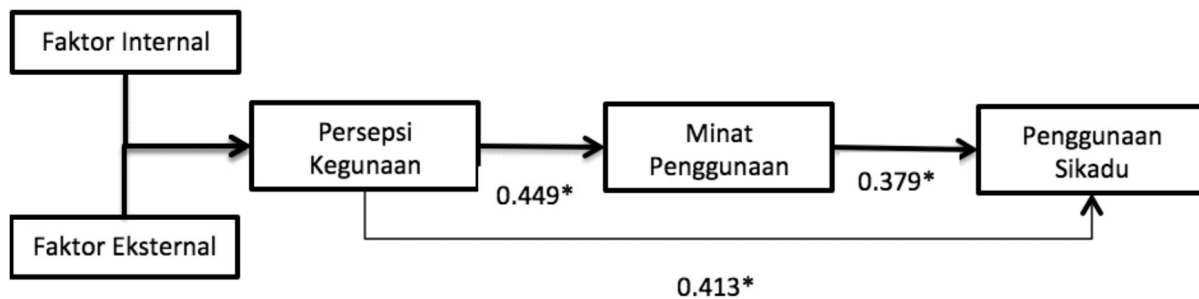

Figure 1: Empirical Model

The presence of perceptions on usefulness may result in a systemwhich is accepted by the students. This is due to the facts that to complete the academic administration, the students have to access *Sikadu.*The easiness system (ease) does not influence intention/ interest on uses as there are internal factors,such as (a) confidence in IT mastery (b) external factors, such aspolicies made by the university managerialwho require students to access the academic information system as long as they are students in the university.

CONCLUSIONS

Students' intention or Interest in using *Sikadu* is influenced byperceptions of usefulness, yet is not influenced by perceptions of easiness. The user' confidence and the university policies encourage them to access *Sikadu.*

The behaviors in using *Sikadu* are influenced by perceptions of usefulness, yet are not influenced by perceptions of easiness. The user' confidence and the university policies encourage them to access *Sikadu.*

The students' behaviors in using Sikadu are influenced by intention to use it. Without intention, they may not assess the internet to have online academic registration that internet may possibly be accessed only at the beginning and the end of semester.

For further researchers, it is expected to compare some TAM models on different research sectors.