Evaluation on Electronic Submission Assessment Grading Assignment (e-SAGA) Using Technology Acceptance Model (TAM)

Mohd Amli Abdullah @ Baharum[1*], Zuria Akmal Saad[2],
Noorsuraya Mohd Mokhtar[3], Suwaibah Abu Bakar[4]

[1,2,3,4]Faculty of Business Management, Universiti Teknologi MARA Cawangan Pahang
Kampus Jengka, 26400 Bandar Tun Abdul Razak Jengka, Pahang, Malaysia
amli_baharum@pahang.uitm.edu.my, zuria@pahang.uitm.edu.my, noorsuraya@pahang.uitm.edu.my,
suwaibah@pahang.uitm.edu.my
*Corresponding Author

Abstract: Technology plays a major role in teaching and learning. Student assignment is part of the process. In this study, the researcher focuses on acceptance of the lecturers on using E-saga process by using TAM Model. 98 respondents from UiTM Pahang name list were selected randomly to answer questinonnaires. The descriptive and inferential statistics were employed in analyzing the data and answering the research questions of the study. Frequency of distribution and measure central tendency were used in presenting and summarizing the data. Descriptive statistics such as means, standard deviation and percentage appropriate were used to describe research questions of the study. The results of the study demonstrated that some TAM constructs had a direct and indirect effect on users' behavioral intention to use e-SAGA. For that reason, there is potential for practical application in the development and management of e-SAGA in UITM.

Keywords: Assignment, Learning, Teaching, Technology

1. Introduction

The introduction of technology in the academic's world has changed the way of submission, marking, grading, and returns of an assignment. Nowadays, there are more universities and colleges that have taken this opportunity to develop or use the technology in assignment management to go along with the trends (Ramnarain-Seetohul, Abdol Karim and Amir, 2013). The past studies showed that using the technology in assignment management and assessment process started in early mid 1990's. Even though the technology in the students' assessment and assignment brings the advantages for both students and lecturers, somehow several disadvantages still outweigh the fully used of the technology in students' assignment (Barker, Fiedler and Johnson, 2008).

According to Ramnarain-Seetohul, Abdol Karim and Amir, (2013), an assignment can be defined as a tool to evaluate student's understanding and degree of comprehension. In line with other universities, Universiti Teknologi MARA Pahang (UiTM) has been using assignments as one of the assessment tools to evaluate students' understanding.

Before the introduction of i-Learn System in UiTM (E-Learning System), students' assignment used the traditional methods in submitting assignment. The steps involved in assignment management were collecting, marking and distributing to the students (Ramnarain-Seetohul, Abdol Karim and Amir, 2013). However, another study identified there were four steps involved namely submission, recording, marking and return in assignment management (Tregobov, 1998). In UiTM teaching and learning, there are more than several steps involved in assignment management. The traditional steps start from the lecturer giving the instructions to the students either by reading the instruction or printing them out; then the students will prepare the assignment by typing using computer. Next, students will print out the assignment and submit it to the lecturer. The traditional way of submitting an assignment has contributed several problems for the students starting from receiving an instruction until the submission of

the assignment itself. For lecturers, the process of marking, grading and redistributing the assignment is time consuming.

Deming cycle or PDCA cycle was used in this study from the problem identification to solution improvement (Johnson, 2002). Problems were identified from the students' and lecturers' complaints regarding the submission and receiving an assignment that arose in traditional methods. Late submission of assignments causes late return of assignments to students. To explore the study in details, a pilot study was run to determine the numbers of complaints from lecturer. It was found that there were increasing numbers of complaints in 2010 from 36 complaints to 89 complaints in 2011 regarding the late submission of students' assignment (**Fig. 1**).

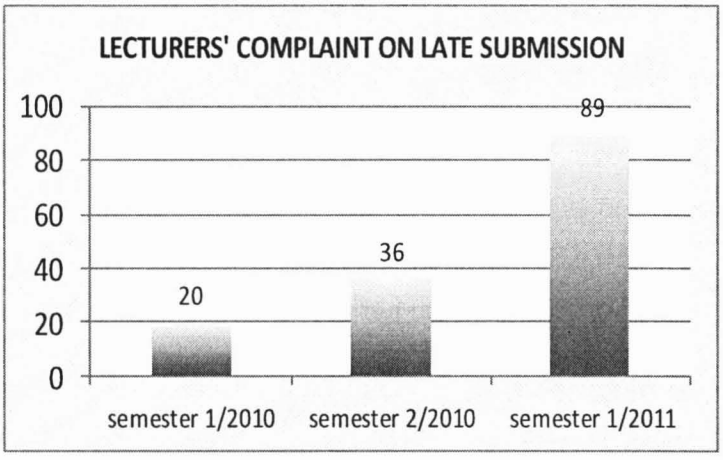

Fig. 1 Lecturers' complaint on late submission

5W's 1H analysis was used to identify the background of the problems (**Fig. 2**).

5W's 1H Analysis	Explanation
What	Late submission of students assignment
Where	Students submit an assignment at many different places – classroom, pigeon hole and lecturers' room
When	Students submit an assignment according due date given by their lecturer
How Many	1225000 assignments per semester (175, 000 students who register 7 subject per semester)
Who	Involved all the lecturers in UiTM Pahang

Fig. 2 5W's 1H analysis

Ishikawa Diagram was used to identify the root cause to the problem in submitting an assignment. From the Ishikawa diagram, there were three problems identified; submission is lengthy, submission process is not standardized and assignments are ruined. From the identification of root cause, list of solutions were presented and reviewed by expertise.

Concern with this matter which will affect service delivery to the end user (student), the development of E-Saga (electronic-submission and grading of assignment) process was introduced to overcome the problems. E-saga process used i-Learn system that is already used in the teaching and learning system of UiTM. i-learn was developed in 2005 to encourage the use of e-learning. Basically, the system is more to the students' assessment such as online quizzes, sharing notes and course information. By adding E-saga process, e-learning becomes more comprehensive.

2. Research Objectives

After applying E-saga to the teaching and learning system in UiTM Pahang, the aim of this study to:

1. Identify the level of Perceived ease of use (PEU), Perceived Usefulness (PU), Attitude towards (A) and Behavioral Intention to use (BIT) on e-SAGA in UiTM Pahang?

2. Identify significant relationship between perceived ease of use, perceived usefulness and attitude with behavioral intention to use on e-SAGA?

3. Literature Review

The acceptance of e-learning context must be treated as information system acceptance. This is very important to ensure the organization can keep up with changes in the global economy. Learning is part of organisations and educational institutions project via the use of technology to improve education and training through electronic learning (Maldonado, Khan, Moon and Rho, 2011) where e-learning is used to support individual learning or organizational performance in delivered education and training delivered through ICTs (information and communications technologies) (Clark and Mayer, 2003). E-learning is very economical, flexible and easy to deliver without the constraints of time and distance (Carey and Blatnik, 2005). Besides that, the internet application such as multimedia, web based information and communication tools have increased academic achievement and students' satisfaction (Katz, 2002). Several models have been used to identify the cause and effect of e-learning (Maldonado, Khan, Moon and Rho, 2011). Most of the users were satisfied with perceived usefulness, perceived ease of use and flexibility (Arbaugh, 2000).

In 1980, Aizen and Fishbein proposed TRA, where this theory focused on suggestion the individual's behavior is determined by one's intention to perform the behavior and this intention is also influenced by individuals' attitude and subjective norms. Next, Aizen proposed TPB that comprised three types of beliefs related to user acceptance: behavior, normative and control (Ajzen, 1985). The behavioral beliefs produce a favorable or an unfavorable attitude toward the behavior; normative beliefs result in perceived social pressure or subjective norm; control beliefs contribute to perceived behavioral control. The combination of these beliefs results in a particular behavior. Another model that has been developed from TRA is TAM and this model has been specifically introduced to explain computer usage behavior Davis, (1989). TAM is one of the well-established models to predict user acceptance and many researchers have used this model to explain user acceptance of different systems (Chen, Gillenson, and Sherrell, 2012; Gefen, Karahanna, and Straub, 2003; Moon and Kim, 2001) (**Fig. 3**). TAM has been used in indentifying an individual's behavioral intention to use a new system or technology via two elements which is perceived usefulness and perceived ease of use.

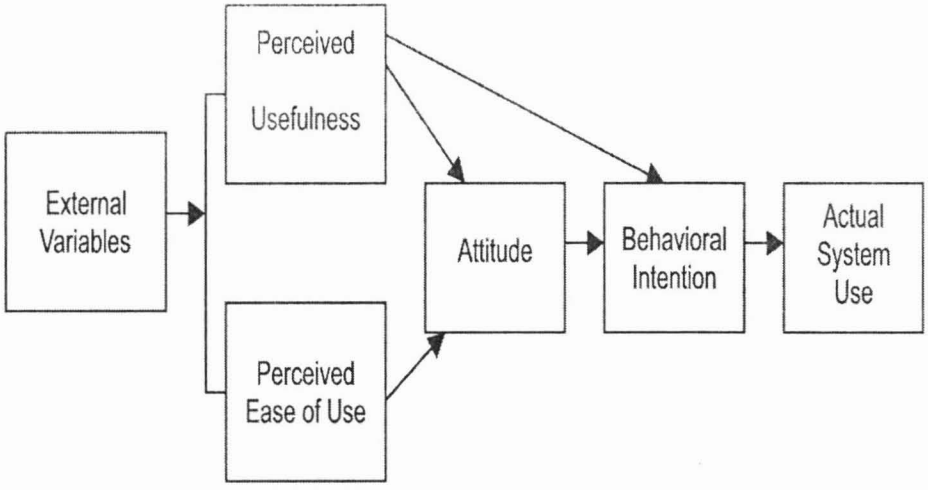

Fig. 3 Technology Acceptance Model (TAM)

4. Findings

The instrument was developed by the researcher based on the objectives of the study and previous literature review. The completed instrument consisted of two parts. Part I was designed to identify demographic background of the respondents. It contained demographic items such as gender, age, academic qualification and faculty. Part II Part II consisted of four sub-sections, as follows: perceived ease of use (PE), perceived usefulness (PU), attitude (AT), and behavioral intention (BIU). Data collected by the questionnaire were coded using SPSS. The descriptive and inferential statistics were employed to analyze the data and answer the research questions of the study. Frequency of distribution and measure central tendency were used in presenting and summarizing the data. Descriptive statistics such as means, standard deviation and percentage appropriate were used to describe research questions of the study. With regards to the other research questions of the study and types of data, another statistical technique was employed, particularly inferential statistics such as Pearson Correlation. For inferential statistic, significant level is set at 0.05.

4.1 Demographic statistics

Sixty percent of those who took the survey were female and forty percent were male. The majority of respondents were aged between 20-30 years old (48%), followed by between 31-40 years old (29%) and minority of respondents were aged between 41-50 years old (16%), followed by above 50 years old (7%). Highest educational level attained by respondents was as follows: 50% had a master, 34% had Phd, 15% had a graduate degree.

Research Question 1

What are the level of Perceived ease of use (PEU), Perceived Usefulness (PU), Attitude towards (A) and Behavioral Intention to use (BIT) towards e-SAGA in UiTM Pahang?

Research Hypotheses

- H1: UiTM Pahang lecturers' behavioral intention to use e-SAGA is affected by their attitude, perceived usefulness and perceived easy of use.
- H2: UiTM Pahang lecturers' attitude is affected by their perceived usefulness and perceived ease of use.

- H3: UiTM Pahang lecturers' perceived usefulness of e-SAGA is affected by their perceived ease of use.

Table 1. Descriptive Statistics for TAM Model

	N	Min	Max	m	SD
Intention to Use	98	2.00	5.00	4.1122	.47910
Perceived Ease of Use	98	2.33	5.00	4.0408	.60214
Attitude	98	1.67	5.00	4.0340	.55714
Perceived Usefulness	98	2.50	5.00	4.0102	.47341

m mean, *SD* standard deviation

The factors of technology acceptance are categorized into four which are perceived ease of use, perceived usefulness, attitude towards, and behavioural intention to use according to Venkatesh, V. and Davis, F.D (2000). The factors were arranged in descending mean, including the value of minimum, maximum and standard deviation as shown in Table 1. The high mean score indicates a higher level of technology acceptance towards the implementation of e-SAGA. Behavioural intention to use is the highest factor that contributed to the level of technology acceptance towards e-SAGA (M = 4.11, SD = .48), followed by perceived ease of use (M = 4.04, SD = .60), attitude towards ((M = 4.03, SD = .56), and perceived usefulness (M = 4.01, SD = .47).

Research Question 2

Is there significant relationship between perceived ease of use, perceived usefulness and attitude with behavioural intention to use towards e-SAGA?

Research Hypothesis

H1: There is significant relationship between perceived ease of use, perceived usefulness, and attitude with behavioral intention to use towards e-SAGA.

Table 2. Correlations

		Perceived Ease of Use	Compute_PU	Attitude	Intention to Use
Perceived Ease of Use	Pearson Correlation	1	.285**	.395**	.443**
	Sig. (2-tailed)		.004	.000	.000
	N	98	98	98	98
Perceived Usefulness	Pearson Correlation	.285**	1	.363**	.279**
	Sig. (2-tailed)	.004		.000	.005
	N	98	98	98	98
Attitude	Pearson Correlation	.395**	.363**	1	.449**

	Sig. (2-tailed)	.000	.000		.000
	N	98	98	98	98
Intention to Use	Pearson Correlation	.443**	.279**	.449**	1
	Sig. (2-tailed)	.000	.005	.000	
	N	98	98	98	98

**. Correlation is significant at the 0.01 level (2-tailed).

A correlation analysis was then run based on each of these constructs and the results are reported in Table 2. The results showed a significant relationship among the original variables of the TAM. Perceived ease of use (Pearson's r = .443), perceived usefulness (Pearson's r = .279) and attitude (Pearson's r = .449) significantly related with users' behavioural intention to use towards the e-saga. This data supports hypothesis 1, that there is a significant relationship between perceived ease of use, perceived usefulness, and attitude with behavioural intention to use towards e-SAGA. This shows users' behavioural intention to use e-SAGA is affected by their attitude, perceived usefulness, and perceived ease of use.

Research Question 3

Is there significant relationship between perceived ease of use and perceived usefulness with attitude towards e-SAGA?

Research Hypothesis

H2: There is significant relationship between perceived ease of use and perceived usefulness with attitude towards e-SAGA.

Both perceived ease of use (Pearson's r = .395) and perceived usefulness (Pearson's r = .363) were found significant in affecting user's attitude. This data supports hypotheses 2, that there is a significant relationship between perceived ease of use and perceived usefulness with attitude. This implies that user's attitude to use e-SAGA is affected by their perceived usefulness, and perceived ease of use.

Research Question 4

Is there significant relationship between perceived ease of use and perceived usefulness?

Research Hypotheses

H3: There is significant relationship between perceived ease of use and perceived usefulness.

There is also a significant relationship between perceived ease of use and perceived usefulness (Pearson's r = .285). This data supports hypothesis 3, that there is a significant relationship between perceived ease of use and perceived usefulness. This implies that users' perceived ease of use towards e-SAGA is affected by their perceived usefulness.

5. Conclusion

Similar to earlier studies (Lee, Cheung, and Chen, 2005; Saadé, Nebebe and Tan, 2007) this study confirmed TAM to be a useful theoretical model in helping to understand and explain behavioral intention to use e-SAGA (e-Learning). Results of the present research led to the

conclusion that the model well represented the collected data according to the result of goodness-of-fit test.

In the context of endogenous constructs, both perceived usefulness and perceived ease of use had a significant direct effect on behavioral intention to use e-learning. According to the original TAM, perceived usefulness is hypothesized to affect intention to use and perceived ease of use is not hypothesized to directly affect intention. This research was consistent with previous research, whereas some parts were contrary to previous results. One possible clue is, nowadays, learning to use the e-SAGA is considered easy and the benefits from learning through e-SAGA are well known to user in UiTM Pahang. Therefore, both cognitive constructs directly affect the users' intention to use e-SAGA. Moreover, those constructs affect attitude towards e-SAGA and their attitudes affect intention to use.

The results of the study demonstrated that some TAM constructs had a direct and indirect effect on users' behavioral intention to use e-SAGA. For that reason, there is potential for practical application in the development and management of e-SAGA in UiTM.

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