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An Investigation on Students' Acceptance of Writing Web Logs: A Test of Technology Acceptance Model

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Abstract—**The application of computer in education is on the rise recently. However, using web logs in English Language Teaching (ELT) is rather new in Malaysia since the students' acceptance of writing web logs has not been extensively examined in previous studies. Therefore, the objective of this study is to measure students' acceptance of writing web logs employing the Davis' *Technology Acceptance Model (TAM)*. Two determinants–Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) are used to determine an individual's Behavioural Intention (BI) of writing web log. To investigate the relationships among PEOU, PU, and BI of users with and without hands-on experience of blogging, pre- and post-questionnaires were administered on three intact groups of undergraduate students as the target sample. Three hypotheses were formulated based on the objectives of the study. The result of the study shows that with the support of hands-on experience, the students accepted to write web logs because they found it was more useful rather than easy to use. Besides, TAM also had been found suitable to be adopted in educational context to predict technology acceptance prior and subsequent to users having any hands-on experience with the technology for pedagogical purpose.**

Keywords-web log; blogging; Technology Acceptance Model (TAM); user acceptance; Perceived Ease of Use (PEOU); Perceived Usefulness (PU); Behavioural Intention (BI)

I. INTRODUCTION

The prevalence of Information and Communication Technology (ICT) causes an innovative breakthrough for ELT. *Web log* development is an example of how the Internet has been brought into the classroom in valuable and feasible ways [17]. Thus, the application of web logs is in line with one of the current reforms made in the Malaysian education system, which is the emphasis of ICT across all the subjects. Additionally, since *Blogger Mobile* was introduced in 2005, a further dimension of journaling appeared. It is now possible for users to post photos and text messages via mobile phones to a web log. Thus, pedagogical instructions now are undisputedly being swamped with innovative and advanced technology applications. The application of new ICT tools in ELT is actually decided by the educators based on its appropriateness in teaching and learning context. One of the decisive factors before adopting ICT as part of the ELT materials is evaluating its acceptance among the users–the students. Therefore, students' acceptance to write web logs with and without hands-on experience in the study is fundamental to the success of the implementation of ICT in English as a Second Language (ESL) classroom.

A. Problem Statement

Attitudes and behaviours (or system usage) are mediating constructs to Information System (IS) effectiveness [15]. Since web log is a new technology and users are doubtful regarding their successful adaptation, the attitudes and intentions of writing web logs are shaped before initiating efforts directed to use are formed. However, what have remained largely unknown presently are students' reactions to web logs in ESL classroom. To study whether students possess intentions to use a new technology, TAM conceptualises usefulness and ease of use as important perceptions that must be examined [14]. To examine students' acceptance of writing web logs, the literature puts forward the idea that increased potential for acceptance can be found through the investigation of PEOU and PU of the users. For this reason, TAM was chosen to explore students' acceptance of writing web logs in the study.

A majority of the former empirical TAM studies focussed on IS that were already in use or subjects that were already familiar [19]. One of the objectives of TAM is to develop a diagnostic tool to predict and explain information system acceptance and facilitate design changes before users have experience with a system [5]. However, TAM has not been tested as a model for explaining web logs writing with the support of hands-on experience in ELT. With no further elements added in the original TAM model, the suitability of TAM as a model of writing web logs in ESL classroom needs to be verified. More empirical research is required to elucidate the appropriateness of TAM employment in ELT context.

B. Objectives

The objectives of the study are as follows:

1. To identify whether there is a positive and significant relationship between PEOU and PU before and after having experience of writing web logs;
2. To identify whether there is a positive and significant relationship between PU and BI before and after having experience of writing web logs; and

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3. To identify whether there is a positive and significant relationship between PEOU and BI before and after having experience of writing web logs.

C. Research Questions

The three research questions addressed in the study are as follows:

RQ1. Is there a positive and significant relationship between PEOU and PU before and after having experience of writing web logs?

RQ2. Is there a positive and significant relationship between PU and BI before and after having experience of writing web logs?

RQ3. Is there a positive and significant relationship between PEOU and BI before and after having experience of writing web logs?

II. Literature Review

A. The Rise of Web Logs

The most interesting and imperative innovation in education in recent years is the prevailing introduction of computers into the schools [18]. The WWW is totally redefining how educators obtain information and the way of teaching. Hence, the importance of using the Internet in higher education cannot be mistreated. Web logs, an emerging technology in the late 1990s, is not just a kind of website but has become a universally recognised genre in cyberspace. More and more teens are making use of web logs [16] and the omnipresence of web logs is an indisputable fact [23]. Professors at universities are starting to incorporate web logs into academic courses [3].

The study introduces a new ICT tool – web logs, in the traditional classroom with the intention to provide the students a chance to become the web publishers for their writing and indirectly become better writers in computer-mediated classroom. However, the given opportunity to use a new and exciting technology does not mean students will want to use it [12]. Students' acceptances are paramount in informing both researchers and education practioners about further educational and exploratory implementations [24]. Therefore, getting to know undergraduate students' attitudes about writing supported by web logs is the main objective in the study. In order to investigate the acceptances of writing web logs, the Davis's TAM was employed.

B. Conceptual Framework: Technology Acceptance Model

Some theoretical approaches to understanding the psychology of technology user acceptance are the Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), TAM, and its latest extension, UTAUT [8]. However, to study whether the students accept writing web logs, the literature also suggests that greater potential for acceptance can be found through the investigation of PEOU and PU of the technology users. These are the two key elements specified in the TAM that decide the success or failure of ICT application in education, particularly in ELT material design and selection [1, 5, 6, 25].

TAM was developed by Fred Davis and Richard Bagozzi [5], which can be interpreted as "ones behaviour and the intent to behave is a function of one's attitude toward the behaviour and their perceptions about the behaviour" [13]. Davis defined PEOU as "the degree to which a person believes that using a particular system would be free from effort" while PU was defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" [5]. BI is a measure of the strength of one's intention to perform a specified behaviour [9]. Figure 1 illustrates the original TAM proposed by Fred Davis.

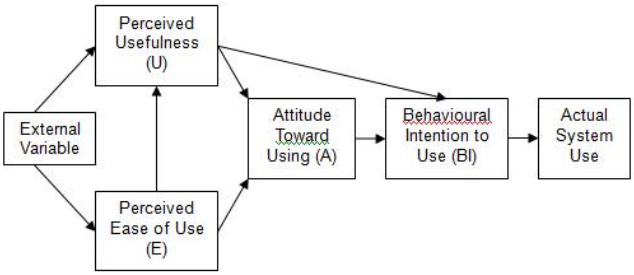
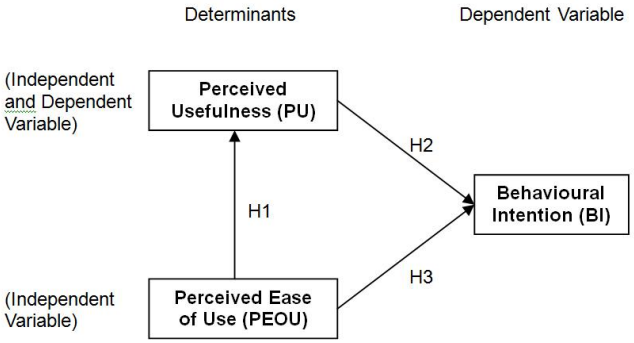


Figure 1. Original Davis's Technology Acceptance Model (TAM) [5].

The four major variables of TAM are PEOU, PU, BI, and Behaviour (B) [14]. BI is the major determinant of actual system use postulated by TAM [6, 20] and it was said to have a direct effect on user acceptance [22]. TAM may not be useful for explaining actual system usage [11]. Since literature has consistently shown that BI is the strongest predictor of actual system use, the "actual system use" was excluded from the study's conceptual framework. The variable "attitude toward using" also was not employed since attitude may not be a significant determinant of intention and usage in a workplace setting in view of the usefulness factor [6]. Based on the conceptual framework in Figure 2, BI is determined by PEOU and PU (BI = PEOU + PU) [21]. Derived from the original TAM in Figure 1, the conceptual framework of the study is formed and depicted in Figure 2.



Note:
H Hypothesis

Figure 2. Conceptual framework of the study based on the TAM.

Based on the conceptual framework used in the study, three hypotheses are formulated as follows:

H1. There is a positive and significant relationship between PEOU and PU before and after having experience of writing web logs;

H2. There is a positive and significant relationship between PU and BI before and after having experience of writing web logs; and

H3. There is a positive and significant relationship between PEOU and BI before and after having experience of writing web logs.

III. METHODOLOGY

The study was quantitative in nature and it employed correlational research design, so a moderate sample size (n=50 to 100) [2] was used. The study applied the cluster sampling method, which involved all undergraduate students (n=78) from three intact classrooms as clusters selected in random as the target sample. The study used an adapted and modified version of the TAM-based questionnaire [9, 26, 27] since its reliability and validity are not only restricted to inspection tools, but also concerns to the user acceptance evaluation of tools and techniques in general [26].

Prior to the actual study, another two groups (n=48) of undergraduate students were chosen randomly to participate in the pilot test. A reliability analysis was conducted to test the research instrument after performing the pilot test before conducting the actual study. Cronbach's alpha or coefficient alpha (α) was computed as the index of reliability for the items within each variable. A 15-item questionnaire was created and administered in the actual study at two points in time after items modification had been done. A pre-questionnaire was administered before the hands-on session in the first lesson while a post-questionnaire was given following the implementation of the web logs writing activity in the last lesson. The pre- and post-questionnaires were identical in printing and the study lasted for one week.

Pearson product moment coefficient correlation was used to investigate the extent to which the three TAM variables (PEOU, PU, and BI) are related without manipulation [2]. PEOU, PU, and BI were measured by five items respectively (see Table 1, Table 2, and Table 3). All items used a 7-point Likert scale that is widely used to measure the strength of an attitude or belief.

TABLE I. ITEMS OF PERCEIVED EASE OF USE (PEOU) DETERMINANT

No.	PEOU items
1.	Learning to use blogs in journal writing is easy for me.
2.	I find it easy to get blogs to do what I want it to do in journal writing.
3.	I do not face problems in interacting with blogs for journal writing.
4.	I find blogs flexible enough to interact with journal writing.
5.	It is easy for me to become skilful at using blogs for journal writing.

TABLE II. ITEMS OF PERCEIVED USEFULNESS (PU) DETERMINANT

No.	PU Items
1.	Using blogs can improve my journal writing performance.
2.	Using blogs can make it easier for me to do journal writing.
3.	Using blogs for journal writing can increase my productivity.
4.	Using blogs can improve the quality of journal writing.
5.	I find blogs useful in journal writing.

TABLE III. ITEMS OF BEHAVIOURAL INTENTION (BI) VARIABLE

No.	BI Items
1.	I always try to use blogs to do journal writing whenever it has a feature to help me write the journal.
2.	I always try to use blogs in journal writing in as many occasions as possible.
3.	I plan to use blogs for journal writing in the future.
4.	I intend to continue using blogs for journal writing in the future.
5.	I expect my use of blogs for journal writing to continue in the future.

IV. FINDINGS AND DISCUSSION

A. Data Analysis and Findings

Through first answering the pre-questionnaire, next completing the web logs writing activity, and then filling out the post-questionnaire, the sample contributed a pool of quantitative data that was statistically analysed through SPSS and the figures were rounded to two decimal places. Hypothesis testing was specifically conducted by using inferential statistics to validate the three proposed hypotheses. The correlation coefficients between PEOU, PU, and BI in the pre- and post-questionnaires are depicted in Table 4.

TABLE IV. CORRELATION BETWEEN PEOU, PU, AND BI IN THE PRE-AND POST-QUESTIONNAIRES

Hypotheses	Correlation coefficient (r)	
	Pre	Post
There is a positive and significant relationship between PEOU and PU before and after having experience of writing web logs.	.46**	.73**
There is a positive and significant relationship between PU and BI before and after having experience of writing web logs.	.40**	.56**
There is a positive and significant relationship between PEOU and BI before and after having experience of writing web logs.	.26*	.34**

Note: *p<.05, ** p<.01 (1-tailed)

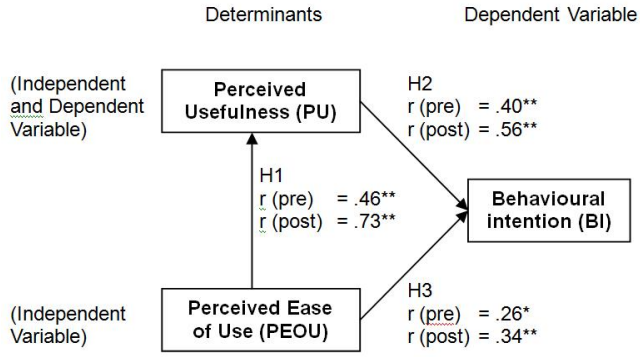
In the pre-questionnaire, there was a moderate positive correlation (r=0.46, p<.01) between PEOU and PU at the significant level of one per cent. This result suggests that although the respondents did not obtain any hands-on experience, a real association existed between the two variables – PEOU and PU of writing web logs. In the post-questionnaire, there was a high positive correlation between PEOU and PU (r=0.73, p<.01) at the significant level of one per cent. Thus, the result indicates that after getting the practical experience of writing web logs, more respondents

than before believed that writing web logs was easy, which directly enhanced the influence of PEOU on PU.

As shown in Table 4, PU are positively correlated with BI (r=0.40, p<.01) at the significant level of one per cent. The moderate association between PU and BI suggests that although the respondents did not have any hands-on experience of blogging, they expected writing web logs to be useful to them, which had influenced their intention to write web logs. In the post-questionnaire, there was a moderate positive association between PU and BI (r=0.56, p<.01) at the significant level of one per cent. The result denotes that with the support of hands-on experience, more respondents discovered the usefulness of writing web logs than before, which directly increased their intention to write web logs.

As referring to Table 4, there is a slight positive correlation between PEOU and BI (r=0.26, p<.05) at the significant level of five per cent. The result shows that even though without the support of hands-on experience, the respondents believed that writing web logs was easy and this fairly influenced their intention to write web logs. In the post-questionnaire, PU is positively correlated with BI (r= 0.34, p<.01) at the significant level of one per cent. The moderate association between PEOU and BI suggests that with the support of hands-on experience, more respondents had found it easy to write web logs than before and the genuine relationship between PEOU and BI was reinforced.

B. Discussion



Note:

H	Hypothesis
r	Pearson product moment correlation coefficient
(pre)	pre-questionnaire
(post)	post-questionnaire
**	Correlation is significant at the 0.01 level (1-tailed).
*	Correlation is significant at the 0.05 level (1-tailed).

Figure 3. Results of hypothesis testing.

The aim of the study is to examine the relationships among the three variables at two different points in time. Figure 3 displays the conceptual framework with the results of hypothesis testing concerning the correlation between PEOU, PU, and BI in the pre- and post-questionnaires. Apparently, there is a moderate positive relationship between PEOU and PU in the pre-questionnaire. The relationship between PEOU and PU in the post-questionnaire is considered high [10]. The correlation in this range would be considered very well and a good prediction can result from one variable to the other [4]. PEOU is a significant antecedent of PU [14], which PU is predicted by PEOU. Once the respondents have started to write web logs, the increase in the PEOU mean score reinforces the relationship between PEOU and PU, which further enhances the user acceptance of writing web logs. Since a positive and significant relationship exists between PEOU and PU, the first hypothesis has failed to be rejected–*There is a positive and significant relationship between PEOU and PU before and after having experience of writing web logs.*

Figure 3 depicts the moderate positive relationship between PU and BI that was consistent in both with and without hands-on experience respondents. PU is treated as both dependent and independent variable because it is predicted by PEOU and it predicts BI at the same time. If compared to the relationship between PEOU and BI, the association between PU and BI is stronger. This shows that PU was the stronger predictor of BI to write web logs for inexperienced and experienced users [19]. In both pre- and post-results, usefulness was more strongly linked to BI rather than ease of use. The result corresponds with the claim that PU was a stronger determinant of BI compared to PEOU [14] since users willingly use the technology that has a critically useful functionality. Based on the positive and significant relationship existing between PU and BI, the second hypothesis has failed to be rejected–*There is a positive and significant relationship between PU and BI before and after having experience of writing web logs.*

Based on Figure 5.1, although PEOU was positively and significantly correlated with BI for inexperienced users, there was a merely slight relationship between PEOU and BI. However, for the experienced users, PEOU was moderately associated with BI. This shows that PEOU is the second determinant of intention to use a technology [2], which corresponds to the findings in previous studies [5, 7] since the relationship between PEOU and BI is largely mediated by PU. The lack of ease of use for both inexperienced and experienced users may be due to the so-called "human factors issues", such as computer access difficulties, hardware disabilities, program failure, "server down", and slow Internet connection. Besides, PEOU is an unstable measure in predicting BI [14]. PEOU was less important as overall in determining the use or behaviour. However, PEOU might influence the initial decision to adopt a system [1]. Hence, based on the positive and significant relationship found between PEOU and BI, the third hypothesis has failed to be rejected–*There is a positive and significant relationship between PEOU and BI before and after having experience of writing web logs.*

V. CONCLUSION

Based on the results from the TAM-based questionnaires, writing web logs was perceived to be more useful rather than easy to use among the undergraduate students. The users' PU had direct and significant effect on their intention to write web logs. PEOU was fully mediated by PU, which had substantial indirect effect on users' intention to write web

logs. The study further discovered that the change of BI influenced by PEOU and PU closely relied on user's hands-on experience. This entails that introducing a new technology to students for specific instructional task without the support of hands-on experience will have less effect on their PEOU, PU, and BI to use the technology.

Moreover, the study also further proposes that TAM is suitable to be adopted in ELT context, which consistently predicts ICT acceptance prior and subsequent to users having any hands-on experience with the technology for pedagogical purpose. The acceptance of writing web logs in ESL classroom examined in the study can be an essential starting point to advocate a variety of ICT applications in ELT besides web logs. Therefore, the educators should extend the consideration of PEOU, PU, and BI as well as their relationships to avoid gratuitous complications whenever applying new technology in their classrooms.

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