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LEARNING MANAGEMENT SYSTEM AND ONLINE STORAGE: A STUDY ON STUDENT ACCEPTANCE

Wan Hussain Wan Ishak
School of Computing
Universiti Utara Malaysia
Email: hussain@uum.edu.my

Fadhilah Mat Yamin
School of Technology Management & Logistics
Universiti Utara Malaysia

ABSTRACT

To date most of the teaching and learning activities have been conducted through electronic environment using technologies such as internet, World Wide Web and electronic gadgets. Learning Management System (LMS) is one of the popular tools that have been used to support and manage teaching and learning. LMS enable instructor to manage students' record, course materials, grading, and communication. Other Web 2.0 technologies and cloud services such as Facebook and Dropbox have been used to complement the LMS. This paper focus on the use of LMS and Dropbox for document sharing between instructor and students. Since, both LMS and Dropbox have their own strength and weakness, this paper investigate students' acceptance and continuous usage of LMS and Dropbox for document sharing to support teaching and learning. This study has utilized Unified theory of acceptance and use of technology (UTAUT) model to assess students' acceptance. The findings shows that students are positive towards using Dropbox for document sharing as compare to LMS.

Keywords: Learning Management System, Online Storage, Dropbox, Unified theory of acceptance and use of technology

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INTRODUCTION

The reform in teaching and learning in higher education (HE) is one of the challenges faced by the Malaysian Ministry of Higher Education in order achieve high-quality education of international standards (Ministry of Education Malaysia, 2015). In order to achieve the goal, educators at the higher education institutions have to utilize information and communications technology (ICT) and practice innovative teaching method. E-learning is one of the alternative methods for education, where it deployed electronic media and ICT facilities and tools to support innovative teaching and learning. Furthermore, the use of up to date ICT tools and gadgets such as smart phone and tablet make the teaching and learning more interactive. The internet can be utilized as a platform for networking, communication and knowledge repository. On the internet, educators and students can posted and share information worldwide free from physically boundary and restriction. It was known that internet is one of the main sources of knowledge to students, where they can search and retrieve any information and materials related to their course easily (Sian et al., 2013).

Learning Management System (LMS) is one of the most popular and vital administrative tools for e-learning (Rubin et al., 2013; Chee et al., 2010). Through this software, instructor can deliver, track and manage the teaching session. On the other part, the students can access to the class materials, lecture notes, online quiz, view forum and etc. Through these activities LMS can be seen as online learning platforms that connect both instructors and students to create new knowledge (Ahmad et al., 2012), share their knowledge (Martín-Blas & Serrano-Fernández, 2008). Min et al (2012) has shown that students are utilizing LMS in their learning. They have high interest on LMS and they are actively using LMS to download the course materials and communicate with their instructor.

However, due to certain limitation of the computer and internet facility the access to LMS has become difficulties to certain instructors and students. Therefore, updating the content especially uploading the course materials have become tedious task for the instructor. Uploading the files into LMS might take several minutes up to hours depending on the internet connection and the bandwidth. Failure of uploading the document may result incomplete course content thus influence students' satisfaction and perception towards the course and the instructor. This problem may influence students' acceptance of LMS as one of the tools that support teaching and learning. Moreover, study has shown that some has stop using e-learning after experience it due to unsatisfaction (Sun et al., 2008). The advancement in ICT has led to the invention of new tools that can be used to support e-learning application. Online storage for example can be used to store and backup documents, automatically synchronized the content, and content management facility to manage the content online. Using this application, educators can upload the course materials easily while the students can download the materials once it completely synchronized.

Various online storage has been introduced such as Google Drive, Mankayia, JustCloud., OpenDrive, MyDrive, Dropbox, and many more. A review by Stevens (2014) shows that each online storage offer different set of features with a storage space up to 10TB. Stevens suggest four important features when choosing online storage: backup & restore feature, security, mobile access, and help & support. These features are considered vital to secure, protect and easy access to the documents from any location. Online storage has potential to be used in conjunction to the traditional storage method that relies on the storage devices. Storage devices are traditional prone to virus, damage, missing, limited space, high cost and etc.

In this paper we assess and compare students' acceptance on documents sharing through LMS and online storage. Formally, we are using document sharing feature in LMS to upload and share documents with students (Min et al., 2012). Online storage is an alternative and supporting tool that can be used in conjunction to the existing LMS (Yamin & Ishak, 2015). This initiative is a part of our effort to utilize internet to support e-learning initiative in conjunction to traditional classroom.

TECHNOLOGY ACCEPTANCE MODEL

Satisfaction is a subjective state of satisfaction (Botelho, 2004). It is a state where people feel please with their achievement due to some effort. Satisfaction is one of the precedents of the intention to continue using the e-learning system and individual performance (Lin, 2012). The student acceptance to LMS and online storage are crucial as it

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reflect student's behaviour, attitude and belief towards LMS and online storage. Furthermore, as a new technology the security of documents stored in online storage is what most concern (Angeles, 2013). According to Wixom and Todd (2005) technology acceptance model can be used to predict technology usage better compare to satisfaction model. This can be achieved by linking behaviours to attitudes and beliefs.

Masrom and Hussein (2008) review several well-known technology acceptance models namely Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and Innovation Diffusion Theory (IDT). The models are summarize in Table 1.

Table 1: Summary of the technology acceptance models

Model	**Pioneer**	**Year**	**Description**
Theory of Reasoned Action (TRA)	Martin Fishbein and Icek Ajzen	1975	An individual behaviour such as use or rejection of technology is determined by one's intention to perform the behaviour that is influenced jointly by the individual attitude and subjective norm.
Theory of Planned Behaviour (TPB)	Icek Ajzen	1985	Actual behaviour is preceded by behavioural intention which is influenced by either attitude, subjective norm, or perceived behavioural control or all of the factors.
Technology Acceptance Model (TAM)	Fred Davis and Richard Bagozzi	1989	Individual's adoption of a technology is dependent on their perceived ease of use and perceived usefulness of the technology
Innovation Diffusion Theory (IDT)	Everett Rogers	1962	Explain how, why, and at what rate new ideas and technology spread through cultures
Unified Theory of Acceptance and Use of Technology (UTAUT)	Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis, Fred D. Davis	2003	Explain user intentions to use an information system and subsequent usage behavior

In this study UTAUT model (Venkatesh et al., 2003) is adapted as it can be used to access students' intentions to use the LMS and online storage for document sharing and their subsequent usage. The model holds four key constructs: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) facilitating conditions; the first three are direct determinants of usage intention and behavior, and the fourth is direct determinant of use behavior. Table 2 explains the four UTAUT variables in context of this study.

Figure 1: UTAUT Conceptual Model

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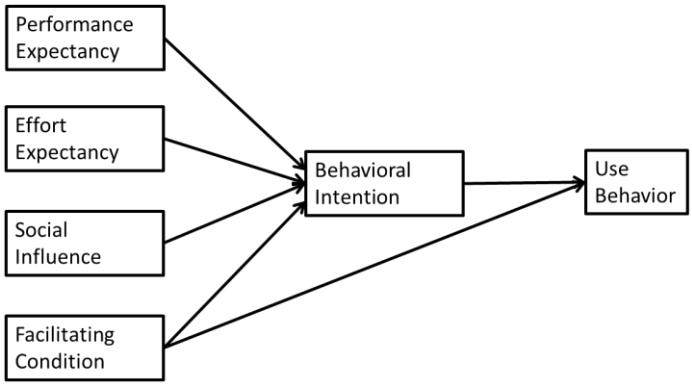

Table 2 UTAUT Variables

Variable	**Explanation**
Performance Expectancy	Students' perception that using the Dropbox will enhance their productivity, enable them to accomplish tasks more quickly, and improve quality of care
Effort Expectancy	Students' perception that it is easy to learn, become skillful, and use the Dropbox.
Social Influence	Students' perception of the degree to which important other persons in the work environment approve (or do not approve) of acceptance and use of the Dropbox.
Facilitating Conditions	Students' perception of the factors in the university that impede or facilitate the acceptance and use of the Dropbox.
Behavioural Intention	Students' overall affective reaction to using a Dropbox.
Use behaviour	Students' evaluation of the use of the Dropbox to support their study.

METHODOLOGY

This study employed purposive sampling method, where the questionnaire with 7 point linkert scale (1=Totally unacceptable to 7=Perfectly acceptable) was distributed to the students that enrolled in three classes that are database, introduction to Artificial Intelligence and logic programming. In these classes the students are provided with the notes and handouts in both powerpoint and pdf formats. These materials are uploaded into LMS and online storage based on certain schedule. The LMS use in this study is LearningZone while the online storage used in this study is called Dropbox. Dropbox is a cloud-based, automatic, file-synchronization service that's ideal for accessing and sharing data from nearly anywhere. Dropbox has been reviewed and listed as the top seven best cloud storage services in 2014 by Casserly (2014) and was recognized as one of the best cloud storage solutions by Duffy (2014).

The total numbers of students from the three classes are 100 students, however the return and usable questionnaire are 80. Descriptive analyses that are frequencies and percentages were conducted in order to provide richer understanding of the students' perceptions with respect to the four constructs of UTAUT model.

FINDINGS & DISCUSSION

The findings of this study shows that 70% of the respondents are female and the rest are male (30%) (Figure 2). Descriptive analysis was conducted on the students' feedback. The 7-likert scale has been aggregated into three groups that are unacceptable (combine 1st to 3rd scale point), neutral (4th scale point) and acceptable (combine 5th to 7th scale point). Table 3 summarizes the results of the descriptive statistics analysis.

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Figure 2: Students' Gender

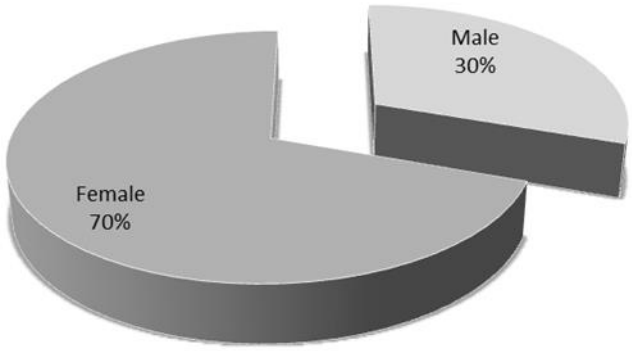

Table 3: Descriptive Statistics (n=80)

Construct	Measurement	LMS			Dropbox		
		U(%)	N(%)	A(%)	U(%)	N(%)	A(%)
Performance expectancy (PE)	Usefulness	3.75	12.5	83.75	11.3	13.8	75
	Task accomplishment	6.25	15	78.75	12.6	7.5	80.1
	Increase productivity	2.5	15	82.5	12.6	8.8	78.9
	Better grade	3.75	17.5	78.75	12.6	7.5	78.9
Effort Expectancy (EE)	Clear and understandable	3.75	8.75	87.5	11.3	10	78.8
	Skilful	3.75	10	86.25	12.6	8.8	78.8
	Easy to use	8.75	10	81.25	12.6	3.8	83.8
	Easy to learn	6.25	10	83.75	13.9	7.5	78.8
Attitude toward using application	Good application	3.75	11.25	85	10.1	2.5	86.3
	Bad application	62.5	6.25	31.25	56.3	10	22.6
	Fun	10	18.75	71.25	17.5	8.8	71.4
	Like working	7.5	15	77.5	11.4	12.5	73.8
Social Influence	Influence people	6.25	15	78.75	12.6	12.5	82.3
	Important people	7.5	18.75	73.75	15.1	10	75.1
	University administration	6.25	13.75	80	13.9	12.5	73.8
	University (General)	7.5	12.5	80	12.5	10	77.6
	Lecturer	7.5	8.75	83.75	8.8	3.8	87.5
Facilitating	Enough	5	16.25	78.75	10.1	12.5	77.5

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condition	resources						
	Enough knowledge	7.5	11.25	81.25	12.6	12.5	75.1
	Compatibility	25	17.5	57.5	36.3	12.5	51.3
	Assistive support	7.5	30	62.5	16.3	22.5	61.3
Behavioural intention	Intend to use…	3.75	13.75	82.5	8.8	11.3	80.1
	Predict to use…	7.5	16.25	76.25	8.9	15	76.3
	Plan to use…	3.75	17.5	78.75	7.6	12.5	80.1

* U = Unacceptable, N = Neutral, A = Acceptable

This study shows that students have positive expectancy on LMS and Dropbox towards increasing their academic performance. The finding shows that overall acceptable percentage for performance expectancy is more than 75%. However, students tend to believe that LMS is more useful compare to Dropbox. This is probably due to the multi functionality of LMS compared to Dropbox that influence students' evaluation.

The students also have very strong expectancy that both LMS and Dropbox are easy to use tools for document sharing. They are strongly agree that LMS is easier to understand (87.5%), easier to learn (83.75%) and easier to become skilful (86.25%) when compare to Dropbox (less than 80%). This shows that LMS has good interface design that makes it easy learn and explore. However, in term of easy to use, students seems to prefer Dropbox compare to LMS. This indeed true as Dropbox has a synchronizing ability where students can install Dropbox into their computer and the synchronizer will automatically upload documents to the cloud storage.

The results also reveal that students have similar positive attitude towards LMS and Dropbox. They are strongly agreed that having documents shared through LMS (85%) and Dropbox (86.3%) are a good idea. They also indicate that they like working with LMS (77.5%) and Dropbox (73.8%) and working with LMS (71.25%) and Dropbox (71.4%) are fun.

In term of social influence, most of the students (more than 80%) agree that they get influence to use LMS and Dropbox from their lecturer. Besides the lecturer, peoples that are important and have influence on the students also support them to use LMS and Dropbox. The university is however tend to encourage students to use LMS compared to Dropbox. This is probably due to the university policy to fully utilize LMS in teaching and learning process.

The students also belief and aware that the university and technical infrastructure does exist to support them when using LMS and Dropbox. However, in line with the university policy, the existing technical, infrastructure and resources are more on to support LMS compare to Dropbox. Therefore students were found to have better knowledge on how to use LMS (81.25%) compare to Dropbox (75.1%).

The results also reveal that the students have strong intention to continue using LMS and Dropbox for their learning purposes especially for document sharing. Students have high intention and planning to use LMS and Dropbox in pursuing their study (overall more than 78%). Furthermore, students predicted that they will keep on using the LMS (76.25%) and Dropbox (76.3%) in their study.

CONCLUSION

This study has shown that both LMS and Dropbox are useful in term of document sharing. Though, both have strength and weaknesses, they are wonderful tools that support teaching and learning process. LMS provide various functionalities that make classroom become borderless and paperless. However, as many information and document uploaded and published into LMS, the network infrastructure need to be adequate to ensure that LMS achieve its objective. This is due to the fact that uploading and downloading documents consume huge volume of bandwidth.

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Dropbox is one of the online storage applications provide excellent support in term of document sharing and management. Dropbox is easy to install and use by the students. The free version of the software provides services and benefits that are adequately required by the students. Students find it convenient to use Dropbox as document shared through Dropbox will be automatically downloaded and synchronized into their computer. Students were notified when the task has completed.

This study proves that students were positively accepting the document sharing through Dropbox, while maintaining the same activity on LMS. This is evident by the students' positive perception towards the construct measured in this study. The findings can be a motivation for the instructor to continue using Dropbox in their teaching in conjunction to existing LMS. The lecturer should consider some of the technical problems such as internet speed and coverage that might affect the use and perception towards LMS and Dropbox.

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