Factors Influencing Perceived Usefulness of Educational Video Sharing Site for Screencast Tutorial Learning

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Abstract

This study aimed to analyse psychological, social, technological and institutional factors in influencing students' acceptance of the use of focused educational video sharing sites. The Technology Acceptance Model (TAM) was used as a fundamental model in this study, and the extended model was built according to the needs of the study being developed. A series of software learning tutorial videos in screencast form was developed and uploaded to a focused educational video sharing site (Learn Software) developed for the purpose of this study. A questionnaire was used as an instrument to assess students' acceptance based on the original construct of the TAM model. This study was in a quantitative form with data collected from 294 students taking Multimedia (major and minor) studies from 5 Public Higher Learning Institutions (PHLIs). From the multiple regression analysis conducted, it was found that psychological, social and technological factors have a significant connection with the students' perceived usefulness towards focused educational video sharing sites, while institutional factors were not significant. In conclusion, the findings of this study can benefit the educational institutions, students and instructors as well as video sharing site developers in understanding students' behaviour on accepting and using the new technology introduced

Keywords: Video Sharing Site, Perceived Usefulness, Technology Acceptance Model, TAM, Screencast Learning

1. Introduction

The development of educational-based video sharing sites is important as it can steer away from the distractions of video content that is not meant for education during a learning process [1]. Academic Earth (http://academicearth.org), Big Think (http://bigthink.com), Fora.tv (http://fora.tv), and TED (http://www.ted.com) are examples of educational video sharing sites developed for more specific learning purposes today [2] With the existence of these sites, students and teachers may share learning videos anywhere and at any time which suits today's modern learning style [3]. Based on the focus of this study, the development of educational video sharing sites named Learn Software specifically for the purpose of learning screencast software tutorials was developed for students, especially students pursuing a program based on information technology and multimedia as they needed to learn software tutorials to prepare assigned tasks and projects.

Screencast is a recording of part or all of the activity on a computer screen containing explanatory audio or instructions that refer to the activity on the computer screen [4] The use of screencast that combines video and narrative enhances understanding more effectively than

text reading [5]. Conventional software tutorial learning is replaced by a video screencast learning. Therefore, it is best used to create software tutorials that show step by step instructions on learning a software. In addition, the video tutorials can also be stopped and played again and again until students really understand [6]. The use of screencast-based tutorials not only helps students, but also helps lecturers and tutors in providing effective instructional materials appropriate to today's learning styles.

2. Literature Review

Technology Acceptance Model (TAM)

TAM is a theory expanded from the Theory of Reasoned Action (TRA) which was introduced by Azjen and Fishbeins, 1975 [7]. TAM was developed to explain how users accept and use certain technology, taking into account factors of consumer behaviour [8]. This model states that when consumers were introduced to a new technology, there are several factors that will affect the decision on how and when to use the technology. TAM was chosen as the basic model in this study because it is a very influential research model over the past decade. Quite a number of previous studies have done some improvements on it and have extended the original TAM model. There are five constructs in the original model of TAM; Perceived Usefulness, Perceived Ease of Use, Attitude Towards Using, Behavioural Intention and Actual Use as shown in Figure 1 below. This study focus on the analysis of the external variables towards the perceived usefulness.
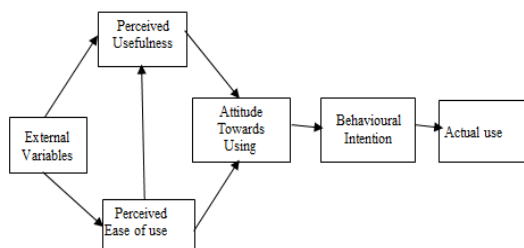

Figure 1.1: Technology Acceptance Model

Perceived usefulness

Perceived usefulness refers to consumers' belief that using the technology or system will improve their work performance [8]. Findings from previous studies show that, based on the TAM model, the perceived usefulness factor influences attitudes towards consumption and the intention to act. This means that if an individual feels that the technology introduced is very useful to him or her, then that person will respond positively to the technology, and thus intend to use it. In addition, external factors are also added to the TAM model to influence a user's usage of a technology [9].Based on the focus of the study, the perceived usefulness factor refers to the benefits of Learn

Software's educational video sharing site, where students consider using the site to benefit themselves from a learning perspective. If a student finds the site useful, then the student will respond positively to the site, and intends to use it. Therefore, the perceived usefulness factor is very important to study in the student acceptance of Learn software educational video sharing site. Based on previous research, it can be concluded that the perceived usefulness factor is very important in studying the acceptance and rejection of a technology introduced. This is because previous research has clearly found that the usefulness or benefits of a system such as enhancing learning performance, facilitating work and so on and encouraging students' attitudes and behaviours to accept and use the system.

Extended TAM Model

In order to build an extended technology acceptance model of educational video sharing site in this study, psychological factors, social factors, technological factors and institutional factors have been included as variable extensions of the original TAM [10] An acceptance of technology is associated with psychological state of an individual towards the use of the technology [11] extended TAM model including all the factors will be tested to investigate the students' acceptance (perceived usefulness) of the use of educational video sharing sites for tutorial learning as shown in figure 2 below.
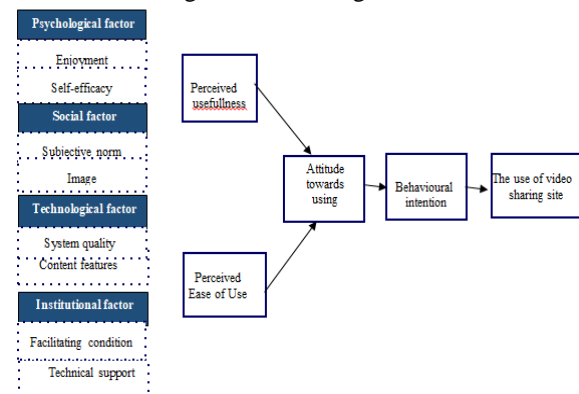

Figure 2: Proposed extended TAM model

Psychological factor

Psychological factors are individual's internal factors that are responsible for decision making. The results from previous studies find that psychological factors such as enjoyment and self-efficacy are the external factors that have been added as extensions of the TAM model and is widely used in the study of acceptance and rejection of the technology introduced, particularly that relates to the system developed for educational purposes.

Enjoyment

Enjoyment in the context of technology acceptance is defined as appreciation obtained from the use of technology or services that manifests user's satisfaction

[12] In general, if users find it fun to use a new technology, therefore the attitude towards the use of the technology is positive [13] Enjoyment factor is seen as a strong influence on an individual's intention to use the computer and this factor has been added to the TAM model in investigating the perceived usefullness of the system or a particular [14] Based on the focus of this study, the enjoyment factor has led the students to think that the site was useful to them as learning software tutorials through screencast video on video sharing sites were interesting and not boring compared to conventional or face-to-face learning alone

Self-efficacy

According to [15], self-efficacy is defined as individual's belief towards his/her own self to perform well and effectively when carrying out a task or responsibility. Computer self-efficacy which is one's belief towards one's capability in using the computer effectively is a form of self-efficacy commonly used to determine technology acceptance [16] In this study, self-efficacy factor refers to a student's belief towards himself/herself in using Learn Software, an educational video sharing site, that students with high self-efficacy will have the confidence in their capability to use the site for the purpose of software tutorial learning, then further assume that the site is useful and easy to use. Meanwhile, a student with low self-efficacy will find that Learn Software site is not easy to use and useless.

Social factor

Social factor is an important influence in technology acceptance and rejection. The impact of social factor is related to the changes of emotion, mind, attitude, and behaviour of an individual towards certain results of interactions with another individual or a group of individuals [17] The findings of previous studies discover that social influence can determine the acceptance and use of a technology [18] The studies on technology acceptance of e-learning sites find that a student can be influenced by friends, lecturers, institution, and other parties that are trusted to decide on the use of the system [19]

Subjective norm

Subjective norm is a social influence that is taken into account in determining the acceptance and rejection factors of the technology introduced. According [7] subjective norm is the influence of people who are close to and important in an individual's life to the extent that they can influence that person's decision towards a behaviour. For the purpose of this study, lecturers and classmates are the individuals who can determine the acceptance or rejection of a student in using Learn Software video sharing site for learning purposes.

Image

Image is one of the measures in technology acceptance and adoption. This construct is widely used in the building of model and theory of technology acceptance such as the TAM Model [18] the diffusion of innovation theory (DOI)[20]. Image is defined as a belief that the use of an innovation is able to increase the image or social status of an individual [7].In this study, Image factors led students to felt like they were seen as clever and prestigious if they use the site for learning software tutorials because of the uses of new platform.

Technological Factor

Technological factor is considered important in studying technology acceptance developed. Previous studies show that technological factors such as system quality, information quality, and service quality can determine the acceptance or rejection of a system developed [21]. For the purpose of this study, technological factors such as system quality and content features were taken into account in evaluating students' acceptance of the developed video sharing site, Learn Software.

System quality

The system quality factor is widely used in the development of various extensions of models that study users' satisfaction and acceptance towards information system [22]. [23] has developed varieties of model's extensions that measure technology acceptance, especially in identifying the factors of e-learning acceptance and found that system quality such as user-friendliness, system stability, fast speed, safety, and flexibility contribute towards users satisfaction and acceptance of the system developed. e findings of previous studies discover that quality system factor is often used in determining users' satisfaction towards the technology developed. [24] find that the students were satisfied with the use of good quality e-learning system and intended to keep using it continuously.

Content features

Content is one of the key characteristics in the design or development of virtual learning environment [25]. It refers to the information characteristics and appearances of the technology or system developed, which include the element and style presented such as texts, graphics, audio, video, animation, and simulation, as well as other multimedia contents [26]. Based on previous studies, the content feature is one of the important factors in determining users' acceptance and satisfaction towards online learning site. For the purpose of this study, content feature refer to the features of the software tutorial video in the form of screencast developed. Audio and video are the fundamental elements applied in the production of screencast video. The use of both multimedia elements associated with tutorial video presentation style will be

studied to determine the influence of content features towards students' acceptance of Learn Software video sharing site for educational purposes

Institutional Factor

The development of technology of online learning environment at institutional level generally involves supports from various parties such as the administration, academic, and students affair, and particularly access to facilities and technical support are of great importance to ensure a success of the use and acceptance of the system [27]. To serve the purpose of this study, the provision of infrastructural facilities such as laboratory with good Internet access and WiFi facility are important influences in determining students' acceptance and rejection to use the Learn Software video sharing site for educational purposes.

Facilitating condition

Facilitating condition is defined as individual's belief towards an organisation and technical infrastructure in supporting the use of a system [18] For this study, facilitating condition refers to infrastructural facilities that need to be provided by the institution in order to support online learning environment through video sharing site. To support and encourage students to use the Learn Software video sharing site, the provision of complete Information Technology infrastructural facilities by the institution such as providing computer labs, Internet access and wide range of WiFi service across the campus area are significant in determining the rate of usage of the site. Other than that, high-speed Internet access is also required to be provided for smooth learning process of Learn Software video sharing site which involves the use of a lot of video elements.

Technical support

Technical support factor is always considered as one of the significant external factors of technology acceptance based on TAM model [28]. In general, technical support comprises of internal parties such as the website administrator, the information technology department of an institution, or a group of experts appointed by the institution, as well as outside parties which include friends, and software and appliances vendors [29]. As for the development of Learn Software video sharing site, the website administrator is responsible of technical support for the students who use the site for learning purposes of various screencast software tutorial provided.

3. Methodology

This study used quantitative approach by conducting a survey methodology. The study instrument used was a questionnaire developed based on previous questionnaire which applied TAM model in studies on the acceptance of new media, e-learning, social media and education.

The study subject was the students of Bachelor of Multimedia (major or minor) programme at Public Higher Learning Institutions (PHLI). The students were selected based on the study requirements that the subjects were using video sharing sites to learn multimedia software tutorials. The study population was 20 PHLIs all across Malaysia that had been identified to offer Multimedia Programmes (major and minor). Of the total population, 5 PHLIs had agreed to collaborate in this study, namely Universiti Utara Malaysia (UUM) and Universiti Pendidikan Sultan Idris (UPSI) of the north zone, Universiti Putra Malaysia (UPM) of the central zone, as well as Universiti Sains Islam Malaysia (USIM) and Universiti Teknikal Malaysia Melaka (UTEM) of the south zone. This study used probability sampling procedure because the subject and samples had all the characteristics of the study population [30]. Based on the population of 1260 students taking Bachelor Degree of Multimedia (major and minor) programme at the five Universities, 294 students were selected to become the study samples as in Table 1 below:

Table 1: Total of study sample

Universiti	Sample
1. Universiti Utara Malaysia (UUM)	51
2. Universiti Pendidikan Sultan Idris (UPSI)	60
3. Universiti Putra Malaysia (UPM)	43
4. Universiti Sains Islam Malaysia (USIM)	80
5. Universiti teknikal Malaysia Melaka UTEM)	60
TOTAL	294

4. Analysis and Findings

Table 2: The regression coefficients of independent variables

Coefficients

Model		Unstandardized Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.03	0.19		10.84	0.00
	Psychological Factors	0.56	0.05	0.55	11.22	0.00
2	(Constant)	1.53	0.21		7.42	0.00
	Psychological Factors	0.40	0.06	0.40	6.84	0.00
	Technological Factors	0.28	0.06	0.29	5.02	0.00
3	(Constant)	1.40	0.21		6.62	0.00
	Psychological Factors	0.34	0.06	0.33	5.47	0.00
	Technological Factors	0.27	0.06	0.27	4.71	0.00
	Social Factors	0.13	0.05	0.13	2.39	0.02
4	(Constant)	1.31	0.22		6.05	0.00*
	Psychological Factors	0.31	0.06	0.31	4.94	0.00*
	Technological Factors	0.23	0.06	0.24	3.94	0.00*
	Social Factors	0.11	0.05	0.11	2.01	0.05
	Institutional Factors	0.11	0.06	0.11	1.79	0.08

a. Dependent Variable: Perceived Usefulness
* P < 0.05

The analysis results show that in terms of significance, psychological factors (ß=0.55, t=11.22, p< 0.05) alone contributed 30.4% (r=0.30) of variance changes in perceived usefulness [F (1,289)=125.97,

p<.05]. While the combination of both psychological ($\beta=0.39$, $t=6.83$, $p< 0.05$) and technological factors variables ($\beta=0.29$, $t=5.02$, $p< 0.05$) contributed 36% ($r=.36$) of variance changes in perceived usefulness [$F(2,288)=80.85$, $p<.05$]. Additionally, when social variable ($\beta=0.13$, $t=2.39$) was taken into account, the three independent variables accounted for 37.2% ($r=0.37$) of variance changes in perceived usefulness [$F(3,287)=56.70$, $p<.05$]. In conclusion, the results of the study hypotheses are as in Table 3 below.

Table 3: The hypothesis results of Ha^1, Ha2, Ha^3 and Ha^4

No.	Hypothesis	Result
Ha^1	There is a significant positive correlation between psychological factors and perceived usefulness of the Learn Software's educational video sharing site.	Accepted
Ha^2	There is a significant positive correlation between social factors and perceived usefulness of the Learn Software's educational video sharing site.	Accepted
Ha^3	There is a significant positive correlation between technological factors and perceived usefulness of the Learn Software's educational video sharing site.	Accepted
Ha^4	There is a significant positive correlation between institutional factors and perceived usefulness of the Learn Software's educational video sharing site.	Rejected

5. Conclusion

Based on the analysis results, it was found that psychological factors (Enjoyment and self-efficacy), social factors (subjective norms and images) and technological factors (system quality and content features) have a significant positive connection with the perceived usefulness of Learn Software educational video sharing site in influencing students' acceptance of the site, while institutional factors (provision of facilities and technical support) did not influence students' perceived usefulness towards the use of the Learn Software site.

The findings showed that psychological factors such as self-efficacy and enjoyment were significant to the perceived usefulness of video sharing sites. This is because self-efficacy being the passion or motivation of a student will convince the student that the site is useful for his studies. The enjoyment factor has also led the students to think that the site was useful to them as learning software tutorials through screencast video on video sharing sites were interesting and not boring compared to conventional or face-to-face learning alone. As for social factors, this study found that factors such as subjective norms and images may encourage students to think that this site is useful. This is because of the subjective norms factor, the influence of the surrounding individuals such as peers and lecturers who also use this educational video sharing site. Additionally, image factors also led students to perceive the site as being useful to them because the educational video sharing site is the latest learning method via the new media platforms, and the students felt like they were seen as clever and prestigious if they use the site for learning software tutorials.

Apart from that, the findings also discovered that technology factors also contributed to the students' perceived usefulness of Learn Software educational video sharing site. Technological factors such as system quality and content features were considered as important because they involve factors such as the ease of access and the speed of video access on the site as well as the content of the learning videos that are interesting and needed by the students. These factors have encouraged the students to consider this site useful for their studies. For institutional factors, the study found that institutional factors such as the provision of facilities and technical support did not affect them to perceive that educational video sharing sites were useful. This is resulted from mobile learning style that had encouraged the students to browse educational video sharing sites from anywhere using their laptop. Therefore, provision of facilities by institutions such as hardware, laboratories and so on was not considered by the students. Similarly, technical support did not influence them to perceive that this site was useful because the concept of learning.

Additionally, even though the findings showed that institutional factors did not influence perceived usefulness of educational video sharing sites, however, there were previous studies that found that institutional factors such as provision of information technology infrastructure facilities such as computer labs, Internet access, hardware and technical support are important in order for students to perceive the websites for educational purposes developed are useful and ensures continuous use. This is probably because the study subjects at that time had not been exposed to mobile learning style of the concept of one student one laptop as it is today, therefore the students dependence on computer and Internet laboratory facilities by the institution is very important.

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