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CONF-IRM 2010 Proceedings

International Conference on Information Resources
Management (CONF-IRM)

5-2010

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Recommended Citation

Shum, Peoi-Shuan; Land, Lesley; Dick, Geoffrey; and Jamieson, Rodger, "40P. Online Lecturing: Students' want it, but what about the lecturers?" (2010). *CONF-IRM 2010 Proceedings*. 25.

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40P. Online Lecturing: Students' want it, but what about the lecturers?

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Abstract

Universities around the world have been readily embracing online technologies to make their courses more convenient for today's tech savvy gen Y students. However, such a change is often at the expense of the teaching staff as they are suddenly met with increased workload and the need to learn new technologies. Although student acceptance is often looked at, lecturers' acceptance is often ignored. It is important to gauge lecturers' acceptance of these online lecturing technologies as such technologies would be rendered useless if lecturers are not willing to accept and use them in their course. Hence, this study aims to examine the often ignored view from the lecturers' perspective by looking at the factors surrounding lecturer's acceptance of online media for lecturing purposes.

Building on Davis's (1989) TAM model, Daft and Lengel's (1986) media richness theory and educational literature, this study will provide empirical evidence for the effects of perceived usefulness, perceived ease of use, subjective norms, self efficacy, organisational support, lecturing styles and workload on the lecturers' choice to adopt usage of online video media. This paper reports the results of pilot study.

Keywords

Technology Acceptance Model (TAM), Media Richness Theory (MRT), online lecturing, e-learning.

1. Introduction

With increasing student numbers, changes to student demographics, limitations to room sizes and equipment availability, online lecturing can be seen as a response to addressing the changing context of higher education. The term online lecturing is used throughout this study

to refer to the range of video technologies used to deliver digitally captured lectures in a visual format to an online community. Common examples include the use of YouTube, iTunes and university branded online video channels to deliver lecture content. Using online lecturing, students can access educational content at their own convenience at any place, anytime. This is particularly useful to students who are unable to attend lectures due to work commitments, illness and distance barriers. The online lectures can also be used to review the course for exam preparations as well as for students to seek clarification if they had fallen behind in the lecture which may be particularly true for students who come from a non-English speaking background. The biggest advantage though, with online lecturing is its ability for universities to break down institutional and global barriers by making their lectures available to both students and the general public. As the majority of today's youth are spending more time on the internet for entertainment purposes, it is a logical and natural progression that universities are providing students with the "information they are looking for...in the places they are spending their time" (McGough, 2008).

Recently, online video technologies have been introduced into the university curriculum with iTunes U and YouTube being used in universities since 2005 and 2007 respectively. YouTube is a free online video streaming service that allows anyone to view and share uploaded videos. iTunes U is the e-learning arm of iTunes, a free online streaming and download service that allows universities to set up their own iTunes U site where their students and/or the public can accessed audio files, video files and PDFs posted by the university. Materials posted on YouTube and iTunes U are made available to everyone, regardless of whether the user is a student of that university or not. However, iTunes U has a few advantages over YouTube. This includes iTunes U's ability to restrict access to students enrolled in a particular course at that university. Also, iTunes U is a facilitator of mobile learning as files can be downloaded onto computer or mobile devices for later viewing to let students study at their own pace anywhere anytime. The success of these online video technologies has seen it being accepted at many leading universities including Duke, Harvard, MIT, University of California, Yale, Stanford and Oxford to name a few.

As online lecturing is being adopted rapidly by universities worldwide, the understanding of why or why not lecturers are accepting of these new technologies is crucial to its success. Hence, the focus of this study is to provide insight into the understanding of the factors that contributes to the acceptance of online lecturing. In this study, we only look at the use of online video technologies for lecturing.

2. TAM and E-learning

With the growth of the Internet, a wealth of E-learning tools has been introduced to assist the traditional teaching method of face-to-face lectures and tutorials. Additionally, there is a reported increase in demand from university students for e-learning based courses (Volery and Lord, 2000). Many higher education institutions are expanding their investment in e-learning to enhance learning performance, while others are adopting e-learning practices so that they do not fall behind (Govindasamy, 2002; Cheung and Huang, 2005). As a result, approximately 95% of higher education institutions are now utilising some method of e-learning (Pollack, 2003). Common e-learning platforms include the use of course management systems such as WebCT and Blackboard, online discussion forums, podcasts and chat rooms.

2.1 Technology Acceptance Model (TAM)

Since its introduction by Davis (1989), TAM has been used extensively in studies predicting acceptance of ICT technologies including online shopping, online banking and software applications (Selim, 2003). In TAM, ‘perceived usefulness’ and ‘perceived ease of use’ are hypothesised to be the major determinants of technology acceptance (Davis, 1989; Selim, 2003).

2.1.1 Perceived Usefulness

In TAM, perceived usefulness is defined as “the extent to which a person believes that using a particular technology will enhance his or her job performance” (Davis, 1989). Lecturers may perceive online media to be useful as it can help broaden and enrich the students’ learning experience by serving as a more convenient learning platform that can be accessed regardless of place or time differences. Improvement in student performance will be reflected in the lecturer’s performance from both student grades and student feedback. Existing IS literature has provided extensive support of the significant relationship between perceived usefulness and usage intention (Davis et al., 1989; Scott and Walczak, 2009; Lu et al., 2009; Zhang et al., 2008; Saeed and Yang, 2008; Lua et al., 2005; Wang et al., 2006; Yi and Hwang, 2003; Yi et al., 2006; Lee et al., 2007). It is expected that lecturers will use online media if they find that these technologies are useful in the completion of their task, thus:

<p>H1: Perceived usefulness will positively influence the lecturer’s intention to use online lecturing</p>

2.1.2 Perceived Ease of Use

In TAM, PEOU is defined as “the degree to which a person believes that using the system will be free from effort” (Davis, 1989). In this study, PEOU refers to how easy the lecturer believes it is to operate these online video channels to record and publish the lecture recordings.

Many studies have provided strong empirical support for the relationship of perceived ease of use on usage intention, either directly or indirectly through its effect on perceived usefulness (Yuen and Ma, 2008; Zhang et al., 2008; Yu et al., 2005; Saeed and Yang, 2008; Lua et al., 2005; Wang et al., 2006; Yi and Hwang, 2003; Lee et al., 2007). Some studies have also found that PEOU is a better predictor of intention to use than PU (Lowry, 2002 in Lua et al., 2005). It is hypothesised:

<p>H2: PEOU will positively influence the lecturer’s intention to use online lecturing</p>

<p>H3: PEOU will positively influence the PU of online lecturing</p>

Given that many of the lecturers in this study environment do not currently use online video lecturing; behavioural intention instead of actual usage has been chosen as the dependent

variable in this study. Fichman (1992, in Yi et al., 2006) found that by using intention instead of actual usage, the problem of retrospective analysis will be reduced.

2.1.3 Subjective Norms

According to Ajzen & Fishbein (1980), subjective norms are the beliefs held by the social groups that an individual belongs to and which would affect the individual's intention to use. Many studies have shown that an individual is heavily influenced by their immediate social surroundings. Yuen and Ma (2008) argue that the introduction of an e-learning platform is a combined effort of both the instructor and the organization. Previous studies have provided empirical support for the relationship of subjective norms on perceived usefulness (Lua et al., 2005; Dickinger et al., 2008), perceived enjoyment (Dickinger et al. 2008) and intention to use (Lu et al., 2009; Yu et al., 2005; Yi et al., 2006; Hsu and Lu, 2004). In this study, it is hypothesised:

H4: Subjective norms will positively influence the lecturer's PU of online lecturing

H5: Subjective norms will positively influence the lecturer's intention to use of online lecturing

2.1.4 Self Efficacy

Compeau and Higgins (1995) defined self efficacy as an individual judgment of one's capability to use a computer. In this study, self efficacy is defined as the lecturer's assessment of his/her capabilities and understanding in using online media. For lecturers without any formal training or education in technology, online lecturing may not be completely intuitive. It is believed that a lecturer will have a higher tendency to use online lecturing if he/ she perceive him/herself as competent. Gressard and Loyd (1985) found that a teacher's confidence in using computers can influence his/her implementation of that technology in the classroom. Self efficacy was found to have a positive relationship on PEOU of PDAs (Scott and Walczak, 2009), mobile services (Wang et al., 2006) and web management systems (Yi and Hwang, 2003). It is believed that:

H6: Self efficacy will positively influence PEOU of online lecturing

2.1.5 Organisational Support

If an organisation has financial resources available to invest in the required technologies, then this would positively affect the perceived usefulness of a technology (Wang et al., 2006). Mathieson et al. (2001, in Wang et al., 2006) found that the availability of resources has a significant influence on acceptance. Scott and Walczak (2009) found that organisational support has a positive relationship on self efficacy of users in mobile services. Ngai et al. (2007) found the availability of technical support provides significant support for perceived usefulness and perceived ease of use of WebCT. It is expected that the availability of adequate organisational support would help to facilitate technology acceptance indirectly through its effects on the user's self efficacy, PU and PEOU. Thus, it is hypothesised that:

H7: Organisational support will positively influence self efficacy

H8: The availability of organisational support will positively influence the lecturer's PU of online lecturing

H9: The availability of organisational support will positively influence the lecturer's PEOU of online lecturing

2.2 Media Richness Theory

Media Richness Theory (MRT) developed by Daft and Lengel (1986) states that the communication efficiency between people is affected by the fitness of the media and the characteristics of the communication task. According to Daft et al. (1986), media richness is based on the criteria of the medium's capacity to:

- (1) provide immediate feedback,
- (2) transmit multiple cues (body language, facial expressions and tone of voice),
- (3) convey language variety of verbal and non-verbal information (e.g. signs and symbols); and
- (4) personalise the message to convey the emotions and feelings of the message sender

Based on the above set of criteria, studies have found that face-to-face communication is considered to be the richest communication medium due to its capacity to provide instantaneous feedback, transmit cues of body language, facial expressions and changes in voice tones as well as use of formal and colloquial languages and conveying emotions. This is followed by telephone, email, and written documents (Daft et al., 1986; Trevino et al., 1990). As the online media in this current study is essentially a one-way communication channel for lecturers to deliver the lecture content to students, the feedback immediacy criterion will not apply for the online media in this present study.

If a communication medium is rich, there will be less uncertainty and ambiguity associated with the task and hence there will be less effort required to use it which may result in the user experiencing more satisfaction in using it (Lee et al., 2007). Lim and Benbasat (2000) have also found that a medium that allows for sending and receiving of multiple cues to be perceived as useful. Thus, from the perceived media richness of online lecturing mediums, it is hypothesised that:

H10: PMR has a positive impact on PU of using online video media

H11: PMR has a positive impact on PEOU of using online video media

2.3 Lecturing Styles

Lecturing style refers to the approach and techniques used by the lecturer in their teaching (Fardon, 2003). In this study, lecturing styles would refer to the simplistic classification of teacher-centred and student-centred lecturing styles.

Traditionally, teaching has often been carried out in a teacher-centred lecturing (TCL) style where the emphasis has been on the teacher having full control of the classroom and the coverage of clearly structured and content driven lectures in a didactic fashion (Chang, 2007; Lea et al., 2003). TCL refers to a passive lecturing style where the purpose of the lecture is to disseminate predetermined content in the form of concepts and worked examples in a scripted approach (Saroyan and Snell, 1997).

Alternatively, in student centred lecturing (SCL) the lecture becomes an interactive experience between the lecturer and the students and uses a wide range of tools with clearly articulated objectives, limited content, handouts, and student activities composing of group discussions and questions and answer sessions during the lecture to engage students in activities that will assist their learning (Saroyan and Snell, 1997; Chang, 2007). It is believed that lecturers that are student-centred would find that online lecturing would restrict their lecturing style and thus, it is unlikely that they will find that online lecturing easy to use. Thus, it is hypothesised that:

H12: Teacher centred lecturing styles will positively influence the lecturer’s PU of online lecturing.

2.4 Workload

In this study, workload refers to the amount of work expected from a lecturer in a specified period. The introduction of technologies into a workplace would require changes to the work routine as lecturers need to learn how to use the technologies and its associated processes and procedures. Demanding workload coupled with time constraints can hinder technology acceptance (Demetriadis et al. 2003; Hu et al. 2003). Thus, it is expected that:

H13: Workload will negatively influence the lecturer’s intention to use online lecturing.

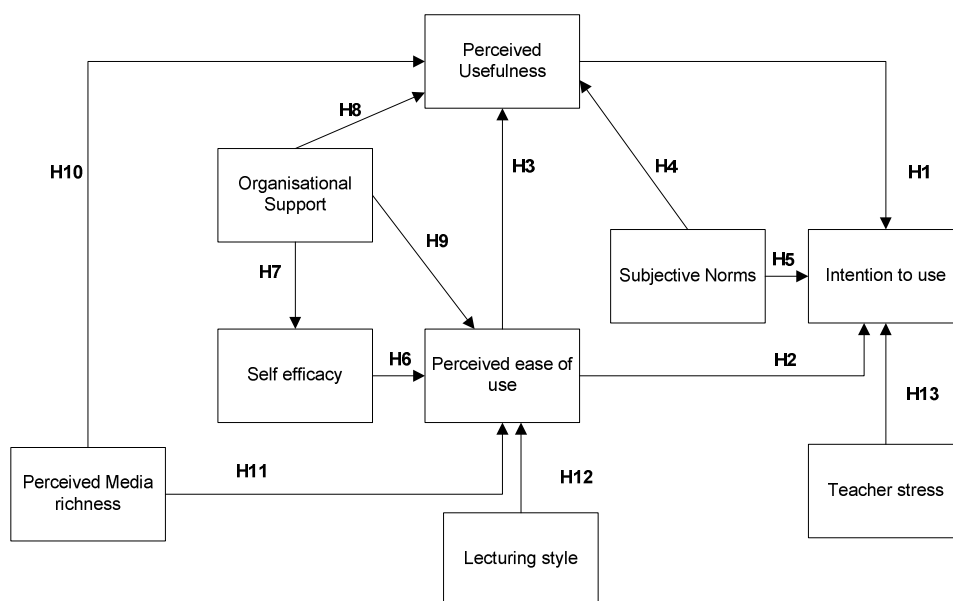


Figure 1: Research model

3. Research Methodology

This study makes use of a mixed method. Firstly, a research model was developed based on existing literature and interviews carried out with 10 academic staff to determine the most salient factors affecting intention to use online lecturing technologies. A questionnaire was then developed. To ensure validity and reliability of the questionnaire, a paper based pilot study was conducted to evaluate the effectiveness of the items used to measure the constructs.

All questionnaire items used to measure the constructs were adapted from prior studies that had proven validity and reliability. Minor wording adjustments were made to these questionnaire items to fit the context of this study. Participants were asked to state the extent to which they agree with that statement using a likert scale with 5 options with 1 being strongly disagree and 5 strongly agree. The questionnaire should take approximately ten minutes to complete.

A total of 25 lecturers from 6 faculties took part in the pilot survey. Among the respondents, 64% were male and 36% female. The respondents had varying teaching expertise from associate lecturers to professors, and reported different levels of self perceived computer usage. The average respondent was aged in the 46-55 age group with an average of 13 years lecturing experience and good (self perceived) computer literacy. Regarding usage of the technologies under study, all participants had either 'never' used or 'rarely' used these technologies.

Data analysis of the research model was conducted using Partial Least Squares (Smart-PLS 2.0 M3), a structural equation modeling technique. PLS is being used as it is a primary technique for causal-predictive analysis in situations of low theoretical information and is appropriate for the early stages of theory development (Howell and Higgins 1990). Since the use of Online media for lecturing purposes is still in the early stages with no known literature exploring the acceptance and effect on its use to higher learning institutions, PLS is appropriate for this study.

4. Results

To ensure that meaningful results were drawn from the structural model, the measurement model was first assessed for discriminant and convergent validity.

4.1 Measurement Model

Evaluation of the measurement model (outer model) involves examining the relationships between the indicators and its corresponding construct for discriminant and convergent validity. Convergent validity is demonstrated when "each measurement item correlates strongly with its assumed theoretical construct" (Gefen & Straub 2005). Discriminant validity is demonstrated when "each measurement item correlates weakly with all other constructs except for the one to which it is theoretically associated" (Gefen & Straub 2005). In PLS, Divergent validity was assessed by examining intercorrelations, AVE and cross loadings. Convergent validity was assessed by checking loadings and weights, cronbach alpha and composite reliability.

The composite reliabilities of all reflective construct scales ranged from 0.8113 to 0.9352 which exceeds the recommended threshold value of 0.70 (Hair et al. 2006; Hulland 1999). Similarly, Cronbach alpha values of all reflective construct scales ranged from 0.6999 to 0.8956 which exceeds the recommended threshold value of 0.70 (Chin 1998) and 0.6 for exploratory studies.

All AVE values were higher than 0.5 (which implies that at least 50% of the variance of the indicators are accounted for (Chin 1998). Furthermore, the square root of AVE for each construct was larger than the correlation between the assigned construct and any other construct in the correlation matrix, thus demonstrating good divergent validity (Chin 1998).

Bootstrapping method (200 re-samples) was used to test the validity of the constructs and the significant level of regression path coefficients. All items loaded substantially high on their intended construct with relatively small cross loadings. Most loadings were found to be significant at $p < .001$ level (see Table 1 and 2).

In this study both convergent and divergent validity of all reflective constructs were met. Thus, all constructs were considered reliable and valid. Results for the formative construct, Lecturing Styles, indicated that multicollinearity does not exist as tolerance was above 0.1 and VIF was less than 10 for all Lecturing Style items (Pallant 2007).

4.2 Structural Model

The structural model (inner model) is a representation of the relationships between the constructs. To assess how well the structural model predicts the hypothesized paths, the path coefficient value for each exogenous/endogenous pair and R square values for endogenous LVs was considered. Table 3 outlines the overall results from PLS with bootstrapping (200 resamples). A large number of paths were found to be significant as outlined in table 3. The results indicate considerable support of the model with an R-Square value of 0.72 (online video) for Intention to Use. R-square values for PEOU (0.51), PU (0.55) and self efficacy (0.41) were much lower. This may be due to the fact that there are other external factors missing in the model. Additionally, blindfolding with an omission distance of 10 was run. For the structural model to possess predictive relevance, Q^2 value has to be greater than 0 (Chin 1998). All Q^2 values were above 0.18, thus the structural model has satisfactory predictive relevance.

Construct/Indicator	Weight	Loading	Standard error	T-stat	Composte reliability	Cronbach Alpha	AVE
Intention to Use							
IU1		0.9501***	0.0182	52.3470	0.9352	0.8628	0.8783
IU2		0.9241***	0.0461	20.0318			
Organisational Support							
OS1		0.7821***	0.2408	3.2487	0.8419	0.7395	0.6400
OS2		0.7782***	0.3048	2.5534			
OS3		0.8382***	0.2497	3.3564			
PEOU							
PEU1		0.8658***	0.0866	9.9929	0.8523	0.7393	0.6605
PEU2		0.8731***	0.1090	8.0080			
PEU3		0.6853***	0.2224	3.0816			
PMR							
PMR1		0.7534***	0.2003	3.7622	0.8453	0.7268	0.6469
PMR2		0.8863***	0.1032	8.5867			
PMR3		0.7664***	0.2115	3.6237			
PU							
PU1		0.9002***	0.0553	16.2859	0.9258	0.8797	0.8062
PU2		0.9107***	0.0760	11.9897			
PU3		0.8826***	0.0633	13.9390			
Self Efficacy							
SE1		0.8563***	0.0777	11.0250	0.8793	0.7992	0.7093
SE2		0.7630***	0.2514	3.0346			
SE3		0.9014***	0.1180	7.6382			
Subjective Norms							
SN1		0.8683***	0.1603	5.4157	0.9052	0.8005	0.8272
SN2		0.9489***	0.0870	10.9068			
Lecturing styles							
LS1	0.9984*		0.7569	1.3190	n.a	n.a	n.a
LS2	-1.0459		1.0601	0.9866			
LS3	-0.3867		0.7362	0.5252			
LS4	0.8229		0.8021	1.0259			
LS5	0.4076		0.8872	0.4595			

***p<0.01, **p<0.05, *p<0.1 (based on one-tailed test)

n.a = not applicable

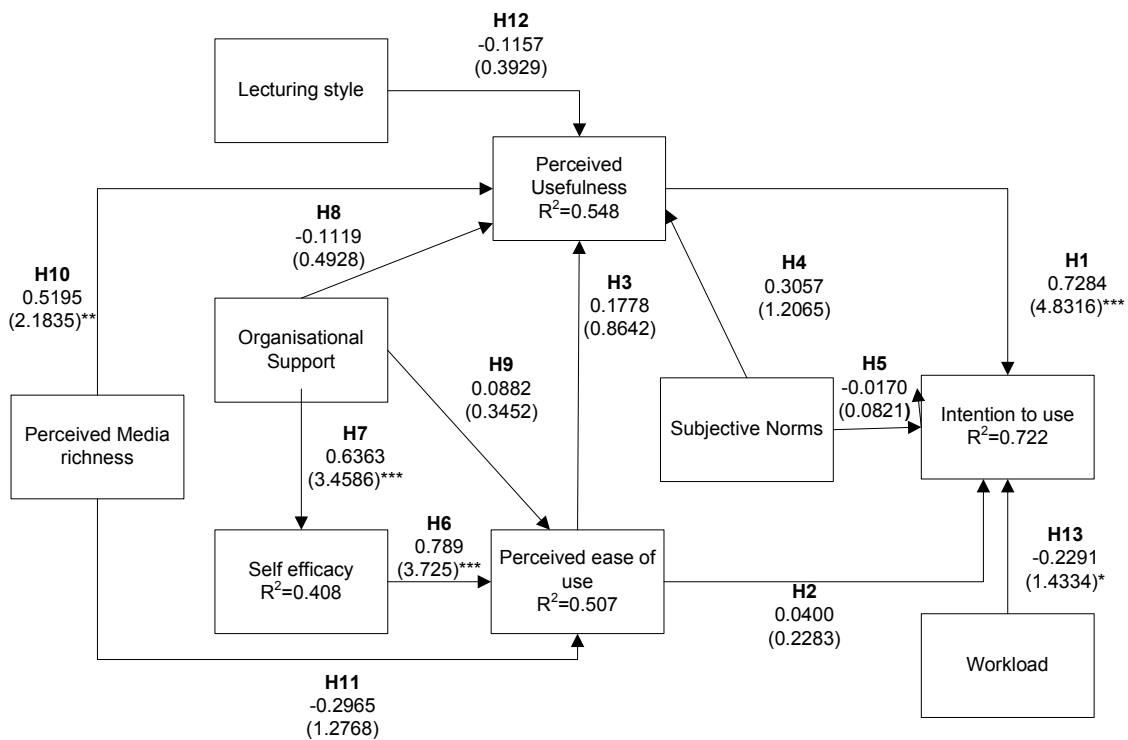
note: Workload was not included in the table as it consists of only one indicator and therefore has a loading of 1.00 and does not have a t-statistic.

Table 1: Discriminant and convergent validity

Hypothesis	Path coefficient	T-stat	Supported Hypothesis?
H1: PU>IU	0.7284***	4.8316	Supported
H2: PEOU>IU	0.0400	0.2283	Not supported
H3: PEOU>PU	0.1778	0.8642	Not supported
H4: SN>PU	0.3057	1.2065	Not supported
H5: SN>IU	-0.0170	0.0821	Not supported
H6: SE>PEOU	0.7888***	3.7248	Supported
H7: OS>SE	0.6383***	3.4586	Supported
H8: OS>PU	-0.1119	0.4928	Not supported
H9: OS>PEOU	0.0882	0.3452	Not supported
H10: PMR>PU	0.5195**	2.1835	Supported
H11: PMR>PEOU	-0.2965	1.2768	Not supported
H12 : LS>PU	-0.1157	0.3929	Not supported
H13: WL>IU	-0.2291*	1.4334	Supported

***p<0.01, **p<0.05, *p<0.1 (based on one-tailed test)

Table 2: Structural Model results



***p<0.01, **p<0.05, *p<0.1 (based on one-tailed test)

Figure 2: Structural Model

5. Discussion

Consistent with previous studies, PU and PEOU was found to have significant relationships with predicting intention to use online video lecturing. Perceived Usefulness was found to be

the dominant determinant in predicting intention to use online lecturing. This indicates that the perceived usefulness of these technologies is particularly important for lecturers. It was found that the perceived media richness of the technologies had a significant relationship with perceived usefulness. This implies that if lecturers perceive the media to be rich, the more likely they will find it useful. However, the richness of the media did not translate to perceived ease of use. The lecturer's perceived usefulness of the media is also affected by the subjective norms of his/her peers.

Particularly important to university management is that of Organisational support. It was found that organisational support had a significant relationship with one's self efficacy of online lecturing media. Furthermore, it was found that self efficacy had a significant relationship with PEOU. Thus, academic institutions should pay careful attention and review the level of support they provide to lecturers. If a university can help lecturer's improve their online lecturing self efficacy, the lecturer is more likely to find the media easy to use and in turn, intend to use the media.

Lastly, workload was found to have a significant, but negative relationship with intention to use. University (faculty and school) management should bear in mind that the introduction of new technologies would inadvertently add to the lecturer's workload especially in the early stages when the lecturer is expected to spend time learning the technology. Once again, it is important that management provides adequate support and some form of reimbursement to entice lecturers to use these technologies.

6. Limitations and Contribution

The first limitation is the generalisability of the current study as all data will be collected from one university; hence, the results will be difficult to generalise to other higher education institutions as each university has different preparedness in accepting e-learning initiatives. Other limitations include the possibility that some relevant constructs are not included and response bias.

Nevertheless, this study contributes to literature through its identification of key contributing factors surrounding lecturer's acceptance of online lecturing. The use of online audio and online video media for lecturing purposes is a relatively new technological initiative which is still in the experimental stages. Furthermore, findings from this study can be used by educational organisations to help gauge whether the use of online lecturing would be a success within their own learning environment and introduce initiatives to help reduce the negative factors/perceptions. The next step of this research is the main survey.

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Appendix A – Pilot Survey Questions

Perceived-usefulness	Adapted from
I believe the use of the following online media system is helpful for my teaching	Liaw et al. (2007)
The quality of students’ learning in my course will be improved by using the following online media system	Mahdizadeh et al. (2008)
In general, I believe the following online media system will boost students’ learning interests	Tao (2008)
Perceived-ease-of-use	
Learning to operate the following online media system should be easy for me	Davis (1989)
It is easy for me to become skilful in using the following online media system	
I think online video media will be difficult to operate	
Intention-to-use	
I intend to use the following online media system when it becomes available	Ajzen & Fishbein (1980)
I intend to use the following online media system in my teaching as often as possible when it suits the teaching task	
Subjective Norms	
My Head of School would support the use of the following online media system in my teaching	Ajzen & Fishbein (1980)
The majority of my colleagues would support me to use the following online media system in my teaching	
Self-efficacy	
I believe I could use the online media system if I had the online help for reference	Compeau & Higgins (1999)
I believe I could use the online media system if someone showed me how to use it first	
I believe I could use the online media system if I had used a similar package previously	
Perceived Media Richness	
If the lecturers feel very strongly about something (positively or negatively), the following online media system allows them to show their feelings.	Guo et al. (2008)
The following online media allows the lecturer to add meaning to what they want to say by using as many cues (body language, voice, tone, etc) as possible.	
The following online media system allows the lecturer to be flexible with the way language (verbal, non-verbal and/or graphics) is used in order to increase understanding	
Organisational Support	
The university is expected to provide most of the necessary help and resources to get lecturing staff familiarised with the following online lecturing media quickly	Scott & Walczak (2009)
The university provides assistance to lecturers to help realise the benefits that could be	

achieved from the use of the following online lecturing media	
I feel supported and encouraged by my university to use the following online media system in my teaching	
Lecturing Style	
My lecturing style tends to lean towards maximising student participation rather than teacher participation	Boyapati (2000)
When I am planning discussion sessions I think about questions which will encourage students to share and evaluate their ideas about key concepts.	
As a lecturer, I actively encourage teacher-student and particularly student-student discussion	
In my lectures, a major part of the time is spent in activities (discussion of a question, solving a problem, developing questions, brainstorming, working in a group etc)	
As a lecturer, I encourage students in my lecture to frequently volunteer their own opinions	
Workload	
As a teacher, I generally get stressed by additional workload to my lecturing responsibilities	Self-developed