

Exploring Lecturers' Acceptance Level of Learning Management System (LMS) at Applying the Extended Technology Acceptance Model (TAM)*

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ABSTRACT The purpose of this study was to investigate the lecturers' acceptance level of the learning management system (LMS) at applying the extended technology acceptance model (TAM). This research has been conducted at only one rural based university in the Eastern Cape Province. Only academic staff members of the institution who have been trained on the LMS were allowed to participate in this research. A mixed methodology research design was adopted. A questionnaire was distributed to a convenient sampling of 30 lecturers from this particular university. The Statistical Package for Social Science (SPSS) has been used to analyze and interpret the data. The results of the study indicated that attitude of lecturers towards LMS was not so bad even though there were some academic staff members who demonstrated negative attitudes towards the use of the LMS. The study therefore recommends that e-learning specialists should train lecturers and inform them about the benefits of using Blackboard.

INTRODUCTION

E-learning today is popular such that it has positively affected the lives of many people (Yan et al. 2011). Students and lecturers are the core drivers of e-learning and they are at the center of learning and teaching. Universities have adopted e-learning without neglecting, of course, the traditional way of learning and teaching but enhancing it. Zhao et al. (2001) assert that academic staff members are the key to effective use of computers in the educational system. The successful and effective use of the LMS largely depends on the lecturers' acceptance and their willingness to embrace it. The manner in which lecturers perceive LMS will determine the acceptance or rejection of it (Teo et al. 2007). LMS is quite stressful at the initial stages of its implementation and some lecturers are reluctant in implementing it for teaching process because it is challenging (Balash et al. 2011).

The university under study introduced e-learning in 2008 responding to the awareness made by Department of Higher Education and Training (DHET) of improving the university's throughput rate. An LMS known as Blackboard, which was customized as WiSeUp, was purchased after the funding from NUFFIC, which is the center for learning and teaching development partners. Since then the academic staff members and students have been trained on this LMS.

It is therefore, with this view that this research seeks to explore the acceptance of LMS using TAM.

Investigating the lecturers' acceptance of learning management systems will help e-learning specialists, students, lecturers themselves, and the university community to understand the importance of e-learning. It will help them identify any flaws such as attitudes towards LMS, if there are any, and perceptions lecturers have about LMS. It is with this reason that the Technology Acceptance Model (TAM) is used in this study. Many researchers such have found TAM as an efficient model to explain the intention to use technology (Teo et al. 2011).

Much research has been done on the students' acceptance of e-learning where TAM has been applied to assess the users' intention to use and to predict their acceptance of technology. Similar studies have been conducted for academic staff and lecturers. However, there is not much research on the acceptance of LMS by academic staff members where TAM has been applied. However, TAM has been applied in measuring and/or predicting the acceptance of e-learning and not LMS. The two words are sometimes used interchangeably. One is the "subset" of the other. LMS is the subset of e-learning. E-learning refers to the acquisition and use of knowledge distributed and facilitated by electronic means (Wentling 2008). It also "embraces a

variety of electronic delivery media, for example, web-based distance education, multimedia, interactive television, virtual classrooms, video conferencing, and virtual learning environments (VLEs) (Fresen 2011).

The characteristics of the e-learning process are said to be based on the Internet, knowledge flows and information disseminates in the form of network courses, worldwide sharing of learning resources, and flexibility of learning (Alalak and Alnawas 2011). E-learning incorporates a wide variety of learning strategies and technologies (Alalak and Alnawas 2011). Carnevale (2000) defines LMS as a software application or web-based technology used to plan, implement, and assess a specific learning process. He further asserts that a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. In addition, a learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums.

According to Gani (2013), ICT has made a significant contribution to the communication and consultation between students and higher education institution staff. One such example has been the emergence of learning management systems (LMSs) in higher education institutions, both locally and globally, with LMSs providing higher education institutions with several possibilities with regards to facilitating the online teaching and learning process (Gani 2013). Nevertheless, research has shown that there is underutilization of LMSs throughout the world. The purpose of this study, therefore, was to investigate the utilization of LMSs in an open and distance learning (ODL) institution in South Africa to ascertain whether they are being used to their full potential (Gani 2013).

In a study conducted by Davis et al. (2014), the findings suggest that perceived usefulness and perceived ease of use as core aspects of the TAM and TAM2 models are confirmed, and study relevance (job relevance in the TAM2 model) and facilitating conditions as extensions are confirmed also. Thus, despite the ostensible robustness of the underlying structure and dimensionality of the TAM core constructs, its usefulness as a model to explain usage in this context and in a setting where acceptance and usage patterns have been established over pro-

longed periods of time is limited (Davis et al. 2014). The findings do, however, suggest certain initiatives to assist in increasing the perceived usefulness of the LMS.

Chipps et al. (2015) found that the learning management system is easy to use and useful for learning. There were significant differences between the two groups of respondents, with the respondents from health sciences being both younger and more computer literate. The nursing respondents, who received more support and orientations, reported finding the learning management system more useful.

Background

According to the monitoring tool Blackboard Analytical Tool (BBAT), all registered courses at the university under study have been uploaded on WiSeUp and there are about 629 active courses whereby 586 are academic courses with content and are being utilized by students for the academic purposes (Ikedinobi 2011).

Since the inception of the LMS in 2008 at the university under study most lecturers and students have been trained on how to utilize the system but according to the monitoring tool BBAT, most of the lecturers are not using the system (Ikedinobi 2011). There seems to be a very slow rate at which the LMS is used by academic staff members/lecturers, which therefore affects LMS usage by students as well. The research problem, therefore, seeks to establish the reason for the low level of lecturers' acceptance of the learning management system at this university. It is assumed that some lecturers are not even using it yet although they were trained on it. Their students, in return, are not using it for the courses those lecturers are teaching.

The Purpose of the Study

The study therefore seeks to identify the reason behind the low rate of the LMS adoption. The main purpose of this research is to explore the reasons that cause lecturers to be less interested in this LMS and investigate their attitudes and intentions to adopt LMS. The significance of this research is that there has never been a research at this university that seeks to understand why there is such a low level of acceptance of LMS among academic staff members.

This is going to benefit academic staff members, students, and the community, which is likely to help institutions of higher learning at large. The contribution of this study may be used in the future research studies to further explore the adoption of LMS in comprehensive and structured university like this one.

The Objectives of the Study

The attitudes of lecturers towards a Learning Management System may determine their response to acceptance or rejection of the LMS technology. If this happens, it may affect the students in the manner in which they view this learning management system (Teo et al. 2007). Attitude is influenced by many factors such as perceptions. The attitude of the lecturers will then determine the intention to use this LMS. The actual use of the LMS by academic staff subsequently follows their intention to use it. The subjective norm (SN) plays a crucial influence on the attitude towards the use of the LMS (Teo et al. 2007). The availability of resources known as facilitating condition plays a crucial part in the adoption of technology.

The Research Questions

- With the low rate of acceptance of LMS, the researchers wanted to establish the lecturers' attitude towards this LMS was?
- How did lecturers' perceive this LMS?
- Has it met their needs and expectations?
- Did it help them become effective and more productive in their work?

If the lecturers perceive the system as difficult to use they may not use it. The research that has been conducted suggests a positive attitude when users perceive technology as useful and easy to use (Davis et al. 1989).

Literature Review

Technology has revolutionized the whole world. The Internet and digital technologies have revolutionized the practice of teaching and learning (Danner and Pessu 2011) where lecturers and student have got the world at their fingertips. Even though everything is at the disposal of lecturers and students, one has to make a decision to use it. Teo and others assert that even though

technology is the powerful tool but the extent to implement it depends on the positive attitude of the teacher to use it (Teo et al. 2011). The hypothesis made by McGill and Klobas in their study was found to be true that the attitude towards the use of LMS has an influence in the level of LMS utilization (McGill and Klobas 2008).

Technology Acceptance Model Theoretical Framework and Its Extension

The technology acceptance model was introduced and proposed by Davis in 1986 (Davis 1986), which was adapted from the theory of reasoned action (TRA) specifically made for modeling user acceptance of information systems (Davis et al. 1989). TAM is one of the best models related to technology acceptance and prediction of user behavior of information technology (Al Adwan and Al Adwan 2013). It actual explains why users decide to accept or reject technology and also helps one trace "how external variables influence belief, attitude, and intention to use" (Park 2009). Davis and others emphasize that the key purpose for TAM is to provide a basis for tracing the impact of external factors on internal believes, attitudes and intentions (Davis et al. 1989).

It is in this vein that TAM has been employed in this research to explore and investigate the lecturers' acceptance of the LMS at the university under study. However, the two determinants, which have been used (Teo et al. 2007) to extend TAM, shall be applied in this research. There are two particular beliefs that are deemed to be of primary relevance for technology acceptance behavior in TAM, namely, perceived usefulness (PU) and perceived ease of use (PEOU) (Davis et al. 1989). Therefore, perceived usefulness and perceived ease of use are posited to have a direct influence on the attitudes towards computer use, which in turn has a direct influence on the intention to use (Teo et al. 2011) (Davis 1986; Davis et al. 1989). To extend TAM, Subjective Norm (SN) and Facilitating Condition (FC) have been added as determinants or constructs that have an influence on the user's attitude (Teo et al. 2011).

The Attitude of Lecturers towards Learning Management Systems and Computers (LMS)

The attitude of users according to TAM is perceived as an important factor, which influ-

ences the use of new technology (Al-alak and Alnawas 2011), such as Blackboard. Educators and managers, according to Park (2009), should make an effort to boost the university students' e-learning self-efficacy. "Research has found that computer attitudes not only play an influential role in determining the extent to which students accept the computer as a learning tool but also future behaviors towards the computer such as using it for further study and vocational purposes" (Teo 2006). Lecturers' attitude towards LMS is influenced by many different variables such as lecturers' perceptions, confidence to use, training, gender, computer anxiety and liking, knowledge and experiences about computer or systems (Teo et al. 2007). McGill suggests that attitude should be measured towards the use of the object (use of LMS) rather than the object itself (LMS) (McGill and Klobas 2008). However, this is contrary to what Kumar and others are saying about computer (object) knowledge and experience (Kumar and Kumar 2003). There are a lot of different definitions of attitudes that have been used by different disciplines and most researchers consider attitude as a relationship between a person and an object (Teo et al. 2007).

The beliefs and skills of lecturers or users is important for utilizing educational technologies like Blackboard, in their teaching activity (Balash et al. 2011). A positive attitude towards the use of LMS will increase their continued use of LMS, which in turn will increase their confidence towards LMS (Mafuna and Wadesango 2012). Al-alak and Alnawas (2011) assert that users with positive attitudes towards information technology will have a higher acceptance of the technology than those with a negative attitude (Alalak and Alnawas 2011).

Perceived Usefulness (PU)

PU can be defined as "perspective user's subjective probability that using a specific application system will increase his/her job performance within an organizational context" (Davis et al. 1989). When a lecturer perceives that using LMS will make him/her more productive he or she will intend to use LMS, and hence the relationship between PU and BIU ($PU' \rightarrow BIU$). Davis et al. (1986) articulate that this relationship is based on the idea that in organizational settings, people develop intentions towards behaviors they

believe will increase their work productivity. The term 'productive' in this context shall mean one doing his/her work within a short space of time, and doing it more efficiently and accurately (Teo et al. 2007). In other words, this means that LMS has a positive effect on the lecturers to finish their work on time, efficiently and accurately (Kumar and Kumar 2003).

Perceived Ease of Use (PEOU)

PEOU refers to a degree to which the prospective user expects the application or system to be free of efforts (Davis et al. 1989). Lecturers should find the system user friendly and not complicated. If lecturers find it easy and comfortable to work with then it will be easy for them to decide to use it. It is with this fact that PEOU has a direct link relationship with PU ($PEOU' \rightarrow PU$) and also PEOU has an influence on the At LMS ($PEOU' \rightarrow AtLMS$). Where there is an increase in the PEOU, which leads to improvement of performance (Al Adwan and Al Adwan 2013). The study conducted by Shroff and others showed a strong significance influence between PEOU and PU in relation to students' acceptance of the e-portfolio system (Shroff et al. 2011).

Subjective Norms (SN)

"Subjective norm is defined as a perception that most people who are important to that person think whether the behavior in question should or should not be performed by that person" (Teo et al. 2007). It is an extent to which a person perceives the demands of others, especially 'important people', on that individual to complete a task (Teo et al. 2007) or to use an LMS. According to TRA as stated by Davis et al. (1989), there is a relationship between SN and BIU ($SN' \rightarrow BIU$). "A person's performance of a specified behavior is determined by his or her behavioral intention (BI) to perform the behavior, and BI is jointly determined by the person's attitude (A) and subjective norm (SN) concerning the behavior in question" (Davis et al. 1989: 983). Park agrees that SN is the second most important construct that affects both behavioral intention and attitude towards LMS (Park 2009). According to Teo et al. (2007), SN has a significance influence on PU ($SN' \rightarrow PU$).

Facilitating Conditions/Resources (FC/R)

Facilitating conditions/resources refers to factors that are found in the environment that has an influence over a person's desire to perform a task (Teo et al. 2007). Facilitating conditions are technology acceptance enablers. It is hard to confirm how well the product/service is doing until a user has an experience with it (Mafuna and Wadesango 2012). Selim in his study emphasizes the importance of resources for e-learning acceptance especially the university support as a second wing of the technology factor (Selim 2007). In this case, the resources may refer to people, availability of computers connected to Internet, network infrastructure, time, LMS, that is, the system in question, university support services, and e-learning material (Mafuna and Wadesango 2012). Factors such as institution support, leadership and effective training and development programs and resources, which are all generic items for lecturers to adopt teaching technologies, are important (Balash et al. 2011).

METHODOLOGY

Research Design

This is an instrumental case study in the sense that the purpose of this research was to gain a better understanding or explanation of a theoretical framework application of TAM to the existing problem at the university under study. "Case study as a methodology is effective in answering the questions of "why", "how" and "what" related to specific phenomenon. It is more adequate when it offers access to information that is barely accessible to researchers" (Al Adwan and Al Adwan 2013). This research has been limited and conducted with only one university's lecturers/academic staff members. Only lecturers or academic staff members of the institution who have been trained on the LMS were allowed to participate in this research. A mixed method research design was followed in this research.

Data Collection Techniques

A questionnaire has been distributed to a convenient sampling of more than 30 lecturers, and only 30 were correctly completed. The researchers discarded some because the survey targeted only the trained academic staff members. Interviews have been conducted with some

lecturers. A 5-point Likert scale was used in the study to assess responses from the respondents. The participants were asked to scale questions from 1 to 5, where 1 was "Strongly Agree", 2 was "Agree", 3 was "Neutral", 4 was "Disagree" and 5 was "Strongly Disagree". Participants were also asked to answer an open-ended questionnaire at the end of the interview.

Data Analysis and Interpretation

The Statistical Package for Social Science (SPSS) has been used to analyze and interpret the data. Since the purpose of the study is to find the reasons why there is a low adoption rate of the LMS known as Blackboard (Bb) by academic staff members, demographic items were included in the questionnaire. Table 1 summarizes the lecturers' demographic characteristics.

Table 1: Lecturers' demographic characteristics

| Variable | Characteristic | Percentage (%) |
|---------------|-----------------|----------------|
| Gender | Male | 46.7 |
| | Female | 53.3 |
| Age | 20-30 | 23.3 |
| | 31-40 | 30 |
| | 41-50 | 16.7 |
| | 51+ | 23.3 |
| | Missing | 6.7 |
| Ethnicity | African | 100 |
| | White | 0 |
| | Indian | 0 |
| | Coloured | 0 |
| | Other | 0 |
| Occupation | Junior lecturer | 26.7 |
| | Lecturer | 33.3 |
| | Senior lecturer | 36.7 |
| | other | 3.3 |
| Trained on Bb | Yes | 100 |
| | No | 0 |

Table 1 shows that 46.7 percent of participants were males and 53.3 percent were female. Almost 53.3 percent of participants were less or equal to 40 years old, whereas forty percent of the participants were above 40 years, and 6.7 percent did not indicate their age. All those who were selected and participated for the study have been trained on Blackboard.

RESULTS

Lecturers' Attitude Towards LMS (Blackboard)

There were about six questions, which were assessing the attitude of the lecturers towards Blackboard. Table 2 displays the results.

Table 2: (Assessing the attitude of the lecturers towards LMS)

| <i>Statements (Variables)</i> | <i>Characteristics</i> | <i>%</i> |
|--|----------------------------|----------|
| B24. Blackboard makes my work interesting. | Agree/Strongly agree | 36.7 |
| | Neutral | 50 |
| | Disagree/Strongly disagree | 13.3 |
| B25. Working with blackboard is fun and enjoyable. | Agree/Strongly agree | 34.7 |
| | Neutral | 33.3 |
| | Disagree/Strongly disagree | 33.3 |
| B26. I believe that working with computers is complicated and difficult | Agree/Strongly agree | 23.3 |
| | Neutral | 40 |
| | Disagree/Strongly disagree | 36.7 |
| B28. I like using blackboard to upload notes, giving assignments, and participating in the discussion forum. | Agree/Strongly agree | 40 |
| | Neutral | 46.7 |
| | Disagree/Strongly disagree | 13.3 |
| B29. Once I start using blackboard I find it difficult to stop. | Agree/Strongly agree | 20.3 |
| | Neutral | 63.3 |
| | Disagree/Strongly disagree | 16.7 |
| B30. Using blackboard is a good idea | Agree/Strongly agree | 60 |
| | Neutral | 20 |
| | Disagree/Strongly disagree | 20 |

Some lecturers (Table 2) (13.3%) feel that working with Blackboard is not interesting. About fifty percent of the participants were neutral about that question, whereas 36.7 percent agreed with the statement that Blackboard makes their work interesting. One question assessed whether working with Blackboard is enjoyable and fun. In this regard, 33.3 percent disagreed with the statement, another 33.3 percent are neutral and 34.7 percent agreed with the statement. Some lecturers (23.3%) feel that working with computers, generally, is stressful to them. However, sixty percent of the participants claim that Blackboard is a good idea in the institutions of higher learning.

Judging from the results displayed above, the average response (35%) on the attitude of the lecturers towards LMS is not a negative one even though there are some lecturers who felt that Blackboard is not helpful to them.

Blackboard's Perceived Usefulness (PU)

About five questions were asked to the Blackboard users to verify usefulness of this LMS. Table 3 shows the summary as given by respondents.

It is important to note that many participants (about 63.4%) agree with the statement in B1 in Table 3 and twenty-three percent are neutral

Table 3: Blackboard's perceived usefulness

| <i>Statements (Variables)</i> | <i>Characteristics</i> | <i>%</i> |
|--|----------------------------|----------|
| B1. Blackboard helps my students to get their course material quickly anywhere, anytime. | Agree/Strongly agree | 63.4 |
| | Neutral | 23.3 |
| | Disagree/Strongly disagree | 13.3 |
| B2. Using blackboard makes an effective lecturer | Agree/Strongly agree | 46.7 |
| | Neutral | 23.3 |
| | Disagree/Strongly disagree | 30 |
| B3. Using blackboard helps me increase my productivity. | Agree/Strongly agree | 43.3 |
| | Neutral | 23.3 |
| | Disagree/Strongly disagree | 33.3 |
| B4. Using blackboard, I can track and know, in time, students who are not doing well in class and help them. | Agree/Strongly agree | 30 |
| | Neutral | 36.7 |
| | Disagree/Strongly disagree | 33.3 |
| B5. I find blackboard a very useful tool for learning and teaching | Agree/Strongly agree | 50 |
| | Neutral | 16.7 |
| | Disagree/Strongly disagree | 33.3 |

about the statement, whereas 13.3 percent disagree with the statement. Thirty percent feel that Blackboard does not make an effective lecturer. However, 46.7 percent are agreeing with the statement in B2 and thirty percent agree that Blackboard is useful in tracking students that are not doing well. Some lecturers find Blackboard to be a very useful tool for learning and teaching and it does increase their productivity at work.

DISCUSSION

The study sought to establish the reasons why there is such a low rate of adoption of LMS at the university under study according to the study carried out by Ikedobi (2011). This was evaluated by applying the extended TAM focusing mainly on the determinants of the extended TAM.

The attitude towards LMS determines the business intent to use the system. According to this study, the attitude of lecturers towards LMS was not so bad even though there were some academic staff members who demonstrated negative attitudes towards the use of the LMS. An average of twenty-two percent had a negative attitude towards the use of the system, and hence this may lead to reluctance to use the system by those particular academic staff members. The perceived usefulness (PU) as a construct determines or leads to the attitude towards LMS. The majority of academic staff members who participated in the study could recognize the usefulness (PU) of the LMS even though some did not perceive it as a useful tool for them. Perceived ease of use (PEOU) also directly influences the attitude of the user towards acceptance of the system. When examining the perceived ease of use (PEOU), some (an average of 11%) felt that it was not easy to work with computers, whereas the majority was just neutral.

When it comes to subjective norms, some participants disagreed that they got influenced by their HODs or students to use Blackboard. Some lecturers even complained about being unavailable. This concurs with Chipps et al.'s (2015) findings.

So some lecturers were not happy about Blackboard and some even preferred Sakai to Blackboard. This therefore answers the question of the low adoption rate amongst academic staff members. However, this contradicts Davis et al.'s (2014) findings, which established a high acceptance level in the health sector.

Now the findings of this current study explained the reasons behind the low adoption rate of this e-learning initiative at this particular university, despite the lecturers' positive attitudes towards e-learning. The justification for the reluctance to adopt e-learning is attributed to lack of the necessary infrastructure and equipment for lecturers and support for the growth of e-learning, insufficient time as a resource, the absence of the necessary conditions for the development of quality educational contents and services (Alalak and Alnawas 2011), and skillful personnel to manage the system.

CONCLUSION

The study therefore concludes that some lecturers were not happy to use Blackboard and others even preferred Sakai to Blackboard. This therefore explains why there is a low adoption rate amongst academic staff members at this particular university under study. This low adoption rate could be emanating from lack of the necessary infrastructure and equipment for lecturers.

RECOMMENDATIONS

University management should intensively support lecturers by means of providing the necessary infrastructure and work together with them to enforce it and ensure that everyone does make use of it. The university needs to make a systematic effort to provide lecturers with training on how to use e-learning systems effectively. E-learning specialists should train lecturers and tell them about the benefits of using Blackboard. As computer anxiety has been found to have a strong and negative effect on intention to adopt e-learning systems, training should be designed to increase lecturers' computer knowledge. Lastly, the university "should take advantage of those who have experience with the use of information technology and utilize them in assisting those who have no such previous experience".

NOTE

* This article was extracted from an Honours Thesis submitted to Walter Sisulu University by Mr. L. Mafuna.

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