

# EMPIRICAL STUDY ON eLEARNING ADOPTION AT INSTITUTIONS OF HIGHER LEARNING IN SOUTH AFRICA

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## Abstract

Although the familiarity of technology in general among academics may not be a problem, research has shown that many course instructors are still lagging behind on the uptake of the new technologies, e.g. eLearning platforms for curriculum delivery. This paper aims at investigating the factors that are affecting the uptake of eLearning platforms by course instructors at tertiary level. The paper answers the question: "Why aren't eLearning platforms used more by instructors for curriculum delivery at tertiary level?" A qualitative research approach was employed whereby conversations with purposively selected academics were the data collection technique. Analysis shows that the uptake of the eLearning platforms by course instructors is affected by their level of confidence to use the technologies for teaching and learning. The confidence here is a combination of computer self-efficacy and teacher efficacy. The study can contribute to a better understanding of determining constructs of lecturers' uptake of new technologies.

**Keywords:** adoption, eLearning platform, teaching and learning, institution of higher learning

## 1. INTRODUCTION

The deployment of eLearning technologies for teaching and learning in institutions of higher learning in South Africa is gaining ground. One of the reasons for the deployment is to provide the growing population with quality, as well as accessible and abundant, educational opportunities, hence the development of alternative programs and curriculum delivery methods. Where new technologies have been effectively used, they have enhanced curriculum delivery (Mapuva, 2009). However, for the institution to be successful with the technologies it has, the intended users must be ready and willing to wholeheartedly adopt the technology. In the education sector, it is argued that the way educators feel about using technology has a huge impact on whether they integrate it into their teaching or not (Jung, 2005). Given the critical role of educators, it is important to understand the contributions that educators make in supporting or inhibiting the uptake of new technology for curriculum delivery.

Although most lecturers today may be more familiar with technology in general, they may still not be fully prepared or able to integrate newer technologies, such as eLearning technology, into their course delivery (Mishra & Koehler, 2006; Chigona, 2014). Roblyer and Doering (2010: 13) concur when they argue that “Even teachers who have sufficient training and access to resources are not using technology as much as has been expected”. This study will look at university lecturers' uptake of eLearning technology and assess the benefits and drawbacks they see in its incorporation into the learning environment.

The aim of this paper is to evaluate the factors that influence the uptake and use of eLearning by lecturers at tertiary level. A traditional university was conveniently chosen by the researchers to be the subject of the case study. The site is of interest because, in 2008, it was recognised that eLearning at this institution was lagging behind in expectations, despite some progress in certain areas, and some glimmers of innovative activity (Keats, 2009). Four years later, anecdotal evidence still shows that the institution is yet to realise the full potential of integrating the new technologies into its teaching and learning processes.

This empirical study is focused and driven by the following questions:

- i. What is happening with the uptake of eLearning by university instructors?
- ii. What factors impact on the uptake?

To answer these questions, the study employed a qualitative research approach, whereby semi-structured interviews were used to collect data. Twenty-six face-to-face, in-depth interviews with university lecturers were conducted, in order to understand issues around adoption and use of eLearning at the institution. Purposive sampling was used to get the lecturers to participate in the study. The Technology Acceptance Model (TAM) (Davis, 1989), commonly used in Information Systems, was adopted for this study, in order to investigate the underlying factors that influence lecturers' decisions to use an eLearning system. TAM suggests that a prior condition for learning effectively using eLearning systems is that users must actually use them. Thus, a greater knowledge of the factors that affect IT adoption and their interrelationships is a pre-cursor to a better understanding of lecturers' uptake of eLearning systems. The significance of this study is that it will help and guide those who develop, implement, and deliver eLearning systems in tertiary institutions in South Africa. In particular, the findings of the study can provide insights as to how the uptake rate of new technologies for curriculum delivery at tertiary level can be improved. In this paper, the terms 'lecturers', 'academics' and 'instructors' are used interchangeably, while 'uptake' and 'adoption' are also used interchangeably.

## 2. eLEARNING AT TERTIARY LEVEL

Researchers (Mapuva, 2009; Kinuthia & Dagada, 2008) have shown that where the technologies have been well-appropriated into the teaching and learning processes of the institutions, these have helped to transform education and have become associated with, and construed in, a variety of contexts, such as distance learning, online learning, and networked learning. Both Dagada (2009) and Dawes (2001) believe that eLearning has the potential to support teaching and learning processes. That is, eLearning can assist instructors to enhance their pedagogical practices and can also aid students in their learning process, as well as offering a platform for effective communication among stakeholders (Dawes, 2001; Bingimlas, 2009). According to Roblyer and Doering (2010: 43), 21st century educators are required to use a variety of teaching methods and to “select technology resources and integration methods that are best suited to their specific needs”. Furthermore, Tomei (2011: 12) is of the opinion that “To prepare students for the future, teachers must seize every opportunity to infuse the technologies their students will be using whenever possible. Most importantly, teachers must know what works best in an online classroom situation.” Researchers (Arora et al, 2011: 29) are of the opinion that “When students' unique learning dimensions are matched with similar teaching styles, it can have a significant positive impact in regard to students' grasp on information, their satisfaction with the course, improved academic grades, and group/team interaction”.

### 2.1 Benefits of eLearning Adoption

According to Hazzani (2010) of King Saud University in Saudi Arabia, the importance of eLearning at the universities is based on a number of factors, mainly:

- addressing the steady increase in the numbers of those wishing to obtain a university education;
- the existence of various sources to obtain knowledge and the fast growth thereof;
- the ability of modern communication and information technology to spread knowledge among educated people, in several ways;
- the adoption of the principle of lifelong learning and self-education.

Literature shows that today's students have an increased exposure to new technologies such that, in some cases, they are more skilled than their educators in the use of technology. These students spend most of their free time on Nintendos, they surf the Internet on smartphones, they share their videos with the world on YouTube (Quinlan, 2014). According to the U.S. Department of Education 2004 Report, there are numerous benefits that students of these days derive from integration of eLearning into the learning institutions.

Citing why eLearning is beneficial to the students, the report outlines the following:

- Forty-nine per cent of students may be interested in pursuing careers in technology.
- Ninety-four per cent of teens use the Internet for school-related research.
- Students spend more time on the Internet than they do watching television.
- Today's students feel technology is an essential and preferred asset in every part of their lives.
- Today's students are ultra-communicators.
- Computers can help students increase their performance on standardised tests.
- Technology can increase students' motivation and improve their self-concept.
- Technology promotes inclusion for students with disabilities (p. 11).

Kobayashi (2012: 215) shows that technology integration is an approach which has been stressed in higher education for several decades in countries such as the USA. Many higher education institutions now offer online courses and encourage faculties to incorporate technology into courses. Alkharang and Ghinea (2013: 2), writing about eLearning in higher learning institutions in Kuwait, argue that:

E-learning initiatives come about as a result of environmental trends which are made up of the same factors that are the cause and the consequence of the revolutionized technology, i.e. rapid change of technology and rapid change to learning environment. The outcome of these trends has been an increasing amount of pressure on educational organizations to use IT to improve their capacity to respond to learning needs. From this pressure, the decision to implement e-learning emerges.

However, it is unusual that the adoption and implementation of the same can be successful without barriers.

## **2.2 Barriers to adoption and use of eLearning**

Research shows that barriers to successful uptake of new technologies, meant to enhance teaching and learning, can be found between the decision to implement the technologies and the impacts on the organisation (Alkharang & Ghinea, 2013). These may include: teacher efficacy, computer self-efficacy, lack of technical skill, and lack of technological pedagogical knowledge (Moore-Hayes, 2011; Mishra & Koehler, 2006; Compeau & Higgins, 1995). Other significant barriers are curriculum planning, technical support, the students and the actual use of ICT, training and personal development, the budget, and the learning technologies committee.

In addition, research has shown that hurdles such as access to equipment, time pressures, lack of mentors, and opportunities for apprenticeship have an impact on instructors' ability to utilise ICT in teaching and learning (Slaouti & Barton, 2007; Madiba, 2009). According to Panda & Mishra (2007: 324), cultural and technical barriers are identified as predominant amongst the many barriers to e-learning. They show that cultural factors, including faculty resistance to innovation and change, and negative attitude towards technology, are a threat to adoption and use of the technologies in learning institutions. Again, the technical issues related to technology reliability, connectivity, adequate infrastructure, and technical support also pose a threat.

However, literature (Alkharang & Ghinea, 2013: 2) shows that while technology critics consistently argue for a balanced review of any technology, the barriers and other challenges brought by technology itself are typically less discussed. The focus on barriers might be perceived negatively, but this should not discourage users in the institutions from using eLearning technologies. The rationale for the focus is simply to enhance the users' understanding of the overall nature of issues that could be encountered. Again, the understanding of the barriers in the institutions is critical, considering the heavy investments, promises, and exponential growth associated with e-learning (ibid). In this paper we are trying to understand the factors impacting on the adoption of eLearning platforms for teaching and learning. Technology Acceptance Model (TAM) was therefore deemed an appropriate framework for the study.

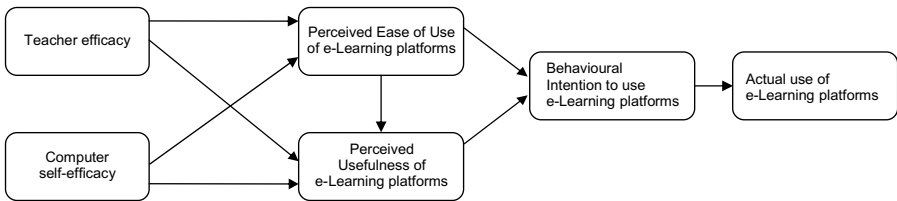
### **3. THEORETICAL FRAMEWORK**

Embracing Technology Acceptance Model (TAM) as a theoretical framework, the researchers conducted and analysed instructors' perceptions of the integration of eLearning platforms in their courses. TAM was originally developed by Fred Davis in 1989. According to Davis (1989), individuals would accept and use eLearning platforms if they perceived the technologies to be useful and easy to use. Perceptions of both ease to use and usefulness of eLearning platforms determine the individual's intention to use the innovation. Within the model, Davis also shows that perceived ease of use of an eLearning platform could influence the individual's perception of the usefulness of the eLearning platform. However, according to Davis, there are external variables that influence the individual's perceptions regarding the usefulness and how easy the eLearning platforms could be to use.

Adapting the model to teaching and learning processes, computer self-efficacy and teacher efficacy were integrated into TAM, as illustrated in Figure 1. According to Tschannen-Moran and Hoy (2001: 783), teacher efficacy is the instructor's "judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated".

Bandura (1997) identifies teacher efficacy as a significant factor determining how well the aspects of professional development manifest in the classroom situation. In other words, teacher efficacy is the belief an instructor has about his/her own capacity as a teacher (Moore-Hayes, 2011). On the other hand, computer self-efficacy is defined as "an individual's perception of his or her ability to use computers in the accomplishment of a task rather than reflecting simple component skills" (Compeau & Higgins, 1995: 192).

When it comes to integration of new technologies in class, research shows that teacher efficacy is perceived to have an influence on the educator's computer self-efficacy (Skoretz, 2011). Nevertheless, both teacher efficacy and computer self-efficacy influence perceived usefulness and perceived ease of use of a technology for curriculum delivery.



**Figure 1:** Constructs used in the study as revised from Davis's (1989) original TAM model

#### 4. RESEARCH DESIGNS

This study employed a qualitative research approach to understand the factors that presently affect adoption of eLearning at the university. Data were collected using in-depth, one-on-one interviews with the university lecturers. The reason for using the qualitative approach is that respondents can constitute a rich and valuable source of information (Devers & Frankel, 2000). Qualitative data collection techniques such as interviews aid in exploring the meanings of the phenomena, the changing behaviours, and conflicts, which may not be accessible in quantitative approaches.

Participants were purposively included in the study. That is, lecturers who seemed to be much involved in eLearning at the university in the study were contacted to participate in the study. One-on-one interviews with 26 lecturers were conducted. However, it was noted that most respondents were those who taught Science courses and there were none from the Arts. Nevertheless, we chose purposive sampling because of the contribution that the participants could make to the study. According to Bless and Higson-Smith (1995), the strength of purposive sampling is based on the selection of data-rich cases for an in-depth study.

A semi-structured interview schedule to engage in a flexible dialogue with the lecturers in the study was used. The researchers were interested in learning about the lecturers' experiences in the adoption of eLearning, as well as their observations of other lecturers who were still not using the platform in the courses that they taught. On average, each interview lasted for 33 minutes. The conversations were tape-recorded with the consent of the participating lecturers, who were promised anonymity. The interviews were then transcribed verbatim. To establish trustworthiness of the findings, five randomly selected interview transcripts were forwarded to the respective respondents for feedback. The respondents made no changes to the transcripts.

After the verification of the interview transcripts with the respondents, a detailed, systematic, qualitative analysis was done, case by case. The researchers read and examined the transcripts repeatedly, each time annotating the text with initial comments. They then plotted the constructs as given in the adapted research model on the transcripts. This was done repeatedly until the chunks or sentences in the data directly connected to the appropriate construct.

## **5. RESULTS**

The university in the study has the necessary technology for eLearning platforms. However, according to the informants in the study, adoption of the platform is still lagging behind. The qualitative data collected were analysed, based on the adapted TAM framework constructs. The findings were organised under the following categories:

- Computer self-efficacy
- Perceived usefulness of eLearning platform
- Perceived ease of use of the technology
- Teacher efficacy.

### **5.1 Computer Self-Efficacy**

One's confidence in using computer applications to complete various activities is important when it comes to integrating new technologies into course delivery. Buabeng-Andoh (2012: 140) shows that "Teachers feel reluctant to use computers if they lack confidence; whereby 'fear of failure' and 'lack of ICT knowledge' have been cited as some of the reasons for teachers' lack of confidence for adopting and integrating ICT into their teaching". Nevertheless, it was encouraging in this study to note that experience with the computer and in-service training on how to use technology for course delivery at the university has a positive impact on the computer self-efficacy of some lecturers in adopting eLearning. However, there are still some lecturers who, though they have computers in their offices, do not have the confidence, or have fears about using the technology, for eLearning.

But it is interesting to note that younger lecturers are more involved in eLearning than the older ones. Regarding computer self-efficacy and adoption of eLearning at the university, this is what some participants had to say:

*"I think you have a lot of people in the staff who are hugely technophobic, who are not interested in using it because that is not the way things have been done ..."*

*"... sometimes people are not into these programmes because they have not used them so they do not know what it does for you."*

*"Older people are not so keen on computers, whereas we [the young ones] are on them [the computers] all the time."*

According to some respondents, the trend with the above lecturers is similar among students as well – the higher levels of year of study classes are somehow resistant to the technology, while the lower levels of year of study classes are more receptive to the technology. An Occupational Therapy lecturer said:

*"Third year class doesn't like the access so much. But the younger classes like our first and second that are coming through have no issues."*

Those lecturers who do not have the confidence to use the platform for teaching and learning have the feeling that, should they use the technology, their work would not be as easy to do. Similarly, Venkatesh and Davis (1996) argue that computer self-efficacy has a significant positive effect on perceived ease of use of eLearning. Hoffman, Novak and Peralta (1999) found that negative perceptions regarding privacy and security increase in conjunction with levels of online proficiency, i.e. computer self-efficacy.

## **5.2 Perceived usefulness of eLearning platform**

People adopt an innovation when they perceive the innovation to be useful. Perceived usefulness is the degree to which a person believes that using a particular system would enhance his or her job performance. This implies that an eLearning system with a high level of perceived usefulness is one for which a user believes that there is a positive user-performance relationship. A lecturer in Health Science explained why she perceives eLearning as a useful platform for teaching and learning. She said:

*"The technology is there now to prevent us from saying we cannot draw, for example, health professionals out of the workplace to attend certain courses. Technology allows us, enables us, to be there without being there; video conferencing..."*



The respondent above indicated that she does not understand why other lecturers are so against adopting the technology. She thinks:

*"It [eLearning] is great and can make life a lot easier. For example, with WebCT, some of the assessments, also having the feature where people can send you assessments to one place, there is no 'I did send it to your e-mail, maybe it got lost in cyber'. You know with WebCT at least everything is there. ... you can track students' usage, you can communicate with them .... Even with the deadlines, with uploading the assignments on line, there is no excuse that my printer went down and, and...."*

There is also extensive research in the Information Systems community, providing evidences of the effect of perceived usefulness on behavioural intention to use (Morris & Venkatesh, 2000). The ultimate reason that engineers use eLearning is that they find the system improves their performance.

### **5.3 Perceived ease of use of the technology**

Perceived ease of use is the degree to which a person believes that using a particular system would be free of effort. The individual's perception on how easy the technology is to use influences perceived usefulness, behavioural intention to use, and perceived credibility. Regarding this category the participants had the following to say:

*"I think you need a lot of support, particularly in these beginning stages to get all of the stuff ironed out, so that somebody can go on, can use it. It needs to be easy, it needs to be quick, and it needs to work. If it does that, I think you will find a lot more joy."*

*"I know that people struggle and it is time consuming and it does not work the way they want it to work, and they give up."*

Another lecturer teaching Mathematics, who said he had given up trying to use eLearning at the university, had this story to tell:

*"I did the necessary to get set up on Ignite for one of my courses, through .... I attended a two-hour training workshop on Ignite. I found I could get onto Ignite from another computer, but every time I tried to get onto it from my computer, it either hung or bombed out [exited]. I spoke to [name withheld] who said I should log a call with CNS which I did. The CNS technician fiddled around on my computer without success and then suggested I use Mozilla Firefox instead, which he installed for me. However, when trying to use Firefox to get into Ignite, a message came up in Firefox saying that it was not supported by Ignite. I gave up. ...I invested a whole lot of time and energy into trying to use this technology, with absolutely no return on my investment."*

Extensive research over the past decade has provided evidence that perceived ease of use has a significant effect on behavioural intention to use, either directly or indirectly, through its effect on perceived usefulness (Garrison & Anderson, 2003). On the other hand, Moon and Kim (2001) point out that ITs that are easier to use would be less threatening to the individual, implying that perceived ease of use will have a positive effect on users' perceived credibility when interacting with e-Learning.

#### 5.4 Teacher Efficacy

It is believed that low teacher efficacy results in little or no use of innovations in the classroom (Ashton & Webb, 1986). Teacher efficacy is important for teachers as this affects “the effort they invest in teaching, the goals they set, and their level of aspiration” (Tschannen-Moran & Hoy, 2001: 783). In other words, the efficacy is strongly related to successful teaching and learning outcomes. It is believed that those with high teacher efficacy are more open to experiments and innovations in curriculum delivery (ibid). Therefore, it is necessary that all educators are assisted in developing their efficacy for teaching. Since some lecturers in this study are not confident with the innovative ways of teaching, they are more likely to use teacher-centred strategies such as lecturing methods. It has been reported that some lecturers shun using the eLearning platform for teaching and learning, because they believe that incorporating eLearning in their course delivery will influence students not to attend face-to-face classes. Based on her observations on why some lecturers are not adopting the platform, one participant reported that:

*“Some of my colleagues that I spoke to said that as a reason why they don't want to use WebCT is because some students will not come to class.”*

Some say they cannot use the eLearning platform for summative assessment because they think there is no privacy among the students when they try to access their assessments. Again, big class sizes, which cannot be accommodated in one computer room at once, force some lecturers to think that the platform is not credible for summative assessments. For instance, one lecturer said:

*“I would if the class sizes were not so big. If there was an opportunity to get my, all of my, students together in a room where they could sit around and do it, that would be fine. But I would not use it for assessments just because of the lack of control. We have a thousand university students. I am never going to find a venue with a thousand students.”*

Similar to consumers' concerns, an eLearning system with assurance that users are private and free from security threats is expected to affect e-Learner instructors' willingness to accept it (Luarn & Lin, 2005).

In addition to concerns about perceptions of usefulness and ease of use, behavioural intention to use e-Learning might be affected by users' perceptions of credible issues about privacy and security in an e-Learning context. Nevertheless, the meta-analysis on perceived credibility suggests that those who have low teacher efficacy are more likely to shun the technology for teaching and learning. Such lecturers would question the credibility of the technology more than their own low sense of efficacy.

## 6. CONCLUSIONS

This study contributes to a better understanding of determining constructs of course instructors' new technologies uptake. It is suggested that the best group of factors that can be used in predicting lecturers' intention to use e-Learning at the university is determined by computer self-efficacy and teacher efficacy. Due to low computer self-efficacy, those not yet into e-Learning are failing to see the benefits of the platform. We argue, therefore, that unless users are clear about the benefits of using the platform as well as of its credibility, they will not adopt the technology.

For most lecturers to be comfortable using the technology, there is a need for the institutions to invest more in the technology training of the intended users, and also to find ways and means of encouraging them to see the usefulness of e-Learning in their course delivery. In other words, training on how to integrate the platform into curriculum delivery should be offered in such a way that it encourages the users to develop a strong sense of technology and teacher efficacies, in order to encourage the uptake of the e-Learning platform for course delivery. Such training could also help deal with adoption challenges such as unwillingness to change the learning atmosphere, and lack of confidence to practise computer applications (Mahmud & Gope, 2009:1).

Furthermore, as cited earlier, Mishra and Koehler (2006) posit that, although many instructors today may be more familiar with technology in general, they may still not be fully prepared or able to integrate newer technologies, such as the e-Learning technology, into their classrooms. However, the perceived credibility of the platform may be influenced by the lecturers' efficacy to teach. Czerniak (1990) argues that instructors with a low sense of teacher efficacy are more likely to use traditional methods of teaching than constructive methods which encourage the incorporation of the technology in the instruction delivery. In the study, some lecturers blame the credibility of the e-Learning platform for not using the technology, yet it could be their teacher efficacy that is the driving factor for their non-adoption.

The most important issue is to ensure that all intended users of e-Learning have computer self-efficacy. For those who feel there is lack of credibility when using the platform, these lecturers should be updated with the features available to deal with their privacy issues.

The institution should also make sure that lecturers have high teacher efficacy which, when combined with computer self-efficacy, will influence the instructors to eagerly incorporate the technology into their teaching and learning activities. The institution should also ensure that adoption-challenging issues such as lack of vision and top management support, absence of institutionalised agenda, skeletal team structure and coordination, technology infrastructure, as well as lack of faculty involvement (Malik, 2012:35), are fully dealt with for e-Learning users. Dealing with these issues would leave the lecturers with no excuses but to adopt the eLearning platform for course delivery, hence improving the quality of education for the students.

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