

# User Friendliness Indices Affecting Adoption Of E-Learning By TIVETs

Kosgei Ursella Chepkoech

Jomo Kenyatta University of Agriculture and Technology (JKUAT)  
Email: ursellakosgei@gmail.com

**ABSTRACT:** Higher education and technical training institutions around the world are increasingly turning to e-learning as a way of dealing with growing and changing student populations. Factors affecting e-learning cover a broad spectrum of categories but are not conclusively defined and researched, and the relative importance of which is not clearly understood. This study sought to establish user friendliness indices affecting adoption of e-learning by TIVETs. The study used survey research design. A sample of 385 respondents was obtained from five selected TIVETs. Each of the TIVETs contributed 77 respondents to the study. Of these 77, 7 of them were teachers or instructors while the rest 70 were students or learners. Simple random sampling method was used to select students/learners and teachers/instructors at the TIVET level. The total study sample was therefore 385 respondents. A structured questionnaire was used for data collection. Descriptive statistical tools were used to analyze data. Descriptive statistics included mean scores, percentages and frequencies. The results show that majority of the teachers used face-to-face learning and few used e-learning. A significant proportion of the teachers indicated they do not use e-learning at all. This shows that e-learning is not fully integrated in TIVETs. This could be attributed to the e-learning systems in place that do not seem to address the needs of students and teachers. According to the students or learners, an e-learning system should be easy for them to learn and operate and be skillful; should be easy for them to get it to do what they want to do; generally student should find it easy to use; should adapt to the device and display in use (responsiveness); interface should be intuitive (user centric) and efficient; and it should allow information to be readily accessible to students and easy to find. The findings show that access to e-learning is low for students and teachers in TIVETs. This is due to a combination of factors key among them attitude of students and teachers towards use of e-learning, interruption, and usability of available resources. All these are informed by user friendliness indices of e-learning system. This study concluded that technical training institutions have not adopted e-learning despite its obvious advantages. The little the TIVETs have tried towards adoption of e-learning, user friendliness of the systems they have created is poor. User friendliness of an e-learning system is a critical element for students/learners and teachers/instructors. The user friendliness indices affecting adoption of e-learning include ease of use, reliability, efficiency, memorability, errors and satisfaction. This study recommends that TIVETs should adopt e-learning to tap into advantages associated with this method of learning. TIVETs should work in collaboration with teachers and learners to ensure e-learning that they adopt is user friendly hence useful to both the students and learners. Teachers and learners should support their TIVETs in developing an e-learning system that suits their learning needs.

**Keywords:** user friendliness, e-learning, adoption

## 1 INTRODUCTION

### 1.1 Background to the study

Higher education and training institutions around the world are increasingly turning to e-learning as a way of dealing with growing and changing student populations (Bullen & Janes, 2007). Education for the knowledge society means new skills and knowledge are needed and it means that lifelong learning has become a necessity. Higher education and training institutions are looking to e-learning to provide convenient and flexible access to high quality education and training that is needed to meet these emerging demands. As they implement e-learning, however, institutions are struggling with the many pedagogical, organizational and technological issues (Bullen and Janes, 2007). Among the training institutions that are looking into e-learning include Technical, Industrial, Vocational and Entrepreneurship Training institutions (TIVET). These institutions remain the popular means by which trained manpower is produced for economic and industrial growth of both developed and developing countries in the world (Usman, Celement and Raihan, 2013). E-learning refers to the use of electronic technology and media to deliver support and enhance teaching, learning and assessment (O'Leary, McFarlane, Timmis and Greenwood, 2003). It also include elements of communication within and between communities of learners and teachers, as well as provision of online content, which may be locally generated or developed elsewhere. The development and delivery of e-learning contents is feasible through a number of ways according to Singh (2005) which include mapping competencies to courses, scheduling classes, registering

students, tracking learning, developing learning content and delivering learning content. Though, e-learning is identified as interactive media environment that facilitate teaching and learning online via internet connectivity, certain challenges have been identified by scholars (Abdellah and Taher, 2007; Peterson and Feisel, 2002). Pirani (2004) observed that while higher education institutions adopt e-learning some new issues arises. These issues include redesigning courses to be taught using e-learning environment, provision of technical infrastructure and possession of technical skills to use e-learning by staff and students. The major challenges to the adoption and implementation of e-learning in TIVET therefore, according to Pirani (2004), lie on technological development, human resources development, infrastructure development, economic, managerial and policy making issues.

### 1.1 Statement of the Problem

Researchers in higher education continue to project rapid growth in online education globally. Allen and Seaman (2011), for instance, reported a 10% growth rate in online enrollments for 2010 in the US higher education. This trend is expected to continue as higher education institutions respond to rising demand and invest more in e-learning (Appana, 2008). The trend might however be slower in emerging economies, which face numerous challenges in adopting and utilizing technology for teaching and learning (Negash, 2010).

After several years of effort to embrace technology, Kenyan government promulgated a National Information and Communications Technology (ICT) Policy in January 2006 to improve the livelihoods of Kenyans by ensuring the

availability of accessible, efficient, reliable and affordable ICT services (Farrell, 2007). The policy's key strategies pertaining to ICT and education is to encourage the use of ICT in schools, colleges, universities and other educational institutions in the country so as to improve the quality of teaching and learning (MoIC, 2006). Factors affecting e-learning cover a broad spectrum of categories but are not conclusively defined and researched, and the relative importance of which is not clearly understood. Factors are typically studied in isolation and contextual factors were ignored (Halperin, 2005). This study therefore sought to establish user friendliness' indices affecting adoption of e-learning by TIVETs in Kenya.

## 1.2 Rationale of the Study

The Kenya Government through its blue print for economic development dubbed 'Vision 2030' has identified increased access to education as crucial for accelerating growth of Kenya's economy. There have been deliberate efforts to promote e-learning in general - as a way to satiate demand for higher education. This demand has been fuelled by low percentage annual intake into universities and TIVETs, leaving out thousands of qualified high school graduates, and by the working class seeking to improve their skills and knowledge. As a result of this demand, many of higher education institutions in Kenya offer some form of virtual learning, as one will find out by searching through their websites. It is expected that as internet infrastructures grow, enrolment in e-learning courses will grow. E-learning has been associated with greater flexibility; the enhancement of face-to-face contact; improvements in teacher-student communication; improved retention and attainment; greater employer interest; and higher levels of student satisfaction. Given these benefits, it is important to understand the factors affecting adoption of e-learning by TIVETs with a view to recommending strategies to mitigate challenges and exploit opportunities. It is expected that the results of this study will make significant contribution to the effective development of technical and vocational education through knowledge of the user friendliness factors affecting adoption of e-learning in TIVETs. The results of the study will also serve as useful guide in the provision of equipment and facilities for technical and vocational schools in Kenya. The findings of this study will be useful to the government of Kenya by providing information on the staff strength of technical and vocational schools in terms of adequacy and competency. The findings of this study will be beneficial to students and teachers of technical and vocational schools by identifying problems and offering immediate and long term suggestions for tackling some of the problems. Finally, the results of this study will serve as a guide to school authorities and teachers regarding strategies for executing various educational policies, particularly that concerning adoption of e-learning in technical and vocational education.

## 1.3 Research Question

1. What are the user friendliness' indices affecting adoption of e-learning by TIVETs?

## 1.4 Objective

1. To identify the user friendliness' indices affecting adoption of e-learning by TIVETs

## 2.0 Literature Review

### 2.1 E-learning

Guri-Rosenblit (2005) defined e-learning as the use of electronic media for a variety of learning purposes that range from add-on functions in conventional classrooms to full substitution for the face-to-face meetings by online encounters. Marques (2006) perceived e-learning as distance education through remote resources. Koohang and Harman (2005) defined e-learning as the delivery of education (all activities relevant to instructing, teaching, and learning) through various electronic media. According to Lee and Lee (2006) e-learning is the self-paced or real-time delivery of training and education over the internet to an end-user device. To Li, Lau and Dharmendran (2009) e-learning is the delivery of a learning, training or education program by electronic means while Liao and Lu (2008) defined e-learning as education delivered, or learning conducted, by Web techniques. For the purposes of this study, e-learning was defined as education that uses computerized communication systems as an environment for communication, the exchange of information and interaction between students and instructors (Bermejo, 2005).

### 2.2 Benefits of E-learning

The major attributes of e-learning include: greater flexibility; the enhancement of face-to-face contact; improvements in teacher-student communication; improved retention and attainment; greater employer interest; and higher levels of student satisfaction (Foreman, 2001).

### 2.3 Barriers to E-learning

There are trade-offs with e-learning especially concerning the higher demands for collaboration between all stakeholders. There is the need to monitor the impact of new learning options, determining what training needs are best met through e-learning, face-to-face or other methods. User friendliness is also a critical element in e-learning. If the e-learning system cannot be used easily and efficiently, learners have to spend too much time locating information and so become annoyed, frustrated and 'turned-off'. Growth of e-learning relies on greater strategic support for e-learning initiatives. Research has however shown evidence of little organizational support or a clear vision about the role of e-learning in many training institutions (Thompson and Lamshed, 2006).

### 2.4 Theoretical Framework

The following three theories attempt to explain e-learning; Learning Theory, Technology Acceptance Model and Diffusion of Innovation Theory. Learning theory perceives e-learning as a site for learning or a 'virtual' space. This theory classifies e-learning as net-based learning and compares it with other forms of learning such as school based learning and work based learning (Illeris, 2007). Illeris (2007) observed that virtual learning environments are seen as peripheral and supplementary. Technology acceptance model attempts to explain the determinants of user acceptance of a wide range of IT (Chen, Gillenson and Sherrell, 2004). It explains individuals' use of a specific system under organizational settings (Huang, 2005).

According to TAM, use of new IT is the product of a rational analysis of its desirable perceived outcome, namely Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). TAM assumes that perceived use and perceived ease of use of IT forms individuals' belief on IT and therefore, predict their attitude toward IT, which in turn predicts acceptance of IT (Ma and Liu, 2004). Diffusion of Innovation Theory hypothesizes that there are five fundamental characteristics of a new IT that promote degree and rate of its use (Schwarz, Junglas, Krotov and Chin, 2004). Those characteristics include relative advantage of the new system over its predecessor; complexity or ease of use of the new system; compatibility or consistency with individual's existing values, past experiences, needs, and work patterns; trialability or testability before commitment to use the new system; and observability so that potential user can observe the new system before use.

### 3.0 Research Methodology

#### 3.1 Introduction

This study used survey research design. A sample of 385 respondents was obtained from five selected TIVETs. Each of the TIVETs contributed 77 respondents to the study. Of

these 77, 7 of them were teachers or instructors while the rest 70 were students or learners. Simple random sampling method was used to select students/learners and teachers/instructors at the TIVET level. The total study sample was therefore 385 respondents. A structured questionnaire was used for data collection. Descriptive statistical tools were used to analyze data. Descriptive statistics included mean scores, percentages and frequencies.

#### 3.2 Research Findings

Students were asked to indicate their agreement or disagreement with a number of statements in regard to e-learning factors. The students were neutral on statements regarding poor availability of e-learning software materials (M=3.36) and absence of web connectivity in their institution (M=3.31). The students disagreed with the statements that there is lack of ICT skills on the part of students (M=2.94), that there is no accessibility to computers (M=2.85) and that there is unwillingness of lecturers to incorporate e-learning (M=2.77). The students also disagreed with the statements that there is poor students' knowledge of ICT (M=2.64) and that there is irregularity of electricity supply (M=2.36). These results are presented in table 1.

**Table 1: E-Learning Factors**

	N	Mean
Poor availability of e-learning software materials	225	3.36
Absence of web connectivity in my institution	219	3.31
Lack of ICT skills on the part of students	220	2.94
No accessibility to computers	227	2.85
Unwillingness of lecturers to incorporate e-learning	209	2.77
Poor students' knowledge of ICT	228	2.64
Irregularity of electricity supply	225	2.36
Valid N (listwise)	174	

The students were asked to indicate why they do not like to use some technologies. Students agreed that it would be good if there was much more e-learning in their courses (M=4.14) and e-learning is an important element of their course (M=4.14). the students were neutral on the statements that e-learning makes studying easier for them (M=3.77), e-learning is one of a number of important components of their course (M=3.67), e-learning makes their course more enjoyable (M=3.60), their college/university is not very smart in the way it uses e-learning (M=3.28) and that with e-learning they interact more with other students (M=3.14). The students disagreed with the statements that without e-learning they would be unable to study (M=2.59), that getting access to an internet connected computer is a problem for them (M=2.54), that they find using technological devices difficult e.g PDA, mobile phone, MP3 player (M=1.77) and that they find using computers difficult (M=1.74). These results are summarized in table 4.2.

**Table 2: Use of Technologies**

	N	Mean
It would be good if there was much more e-learning in my courses	183	4.14
E-learning is an important element of my course	192	4.14
E-learning makes studying easier for me	188	3.77
E-learning is one of a number of important components of my course	179	3.67
E-learning makes my course more enjoyable	188	3.60
My college/university is not very smart in the way it uses e-learning	186	3.28
With e-learning I interact more with other students	183	3.14
Without e-learning I would be unable to study	193	2.59
Getting access to an internet connected computer is a problem for me	191	2.54
I find using technological devices difficult e.g PDA, mobile phone, MP3 player	189	1.77
I find using computers difficult	184	1.74
Valid N (listwise)	136	

The results show that 54.5% of the teachers use e-learning in addition to face-to-face learning. However, 40.9% of the teachers indicated they do not use e-learning. Only 4.5% of the teachers indicated they use e-learning only.

**Table 3: Use e-learning in teaching**

	Frequency	Percent	Cumulative Percent
Yes I use e-learning methods only	1	4.5	4.5
Yes I use e-learning methods in additional to face-to-face learning	12	54.5	59.1
No I do not use e-learning	9	40.9	100.0
Total	22	100.0	

#### 4.0 Conclusions and Recommendations

The findings show that access to e-learning facilities is low for students and teachers in TIVETs. This is due to combination of factors among them attitude of students and teachers towards use of e-learning facilities, interruption, and usability of available resources. All these factors comprise user friendliness indices of e-learning system. Since the TIVETs students do not have enough access to e-learning facilities, any planned take-off of e-learning service delivery should be suspended till adequate facilities are provided. The government should establish a framework upon which TIVETs can rely on in implementing e-learning in their respective institutions. The policy guidelines available are only guides on ICT which are not adequate for implementation of e-learning in TIVETs. The study also recommends that e-learning systems in TIVETs be based on software with artificial intelligence capability. This study recommends that TIVETs should adopt e-learning to tap into advantages associated with this method of learning. TIVETs should work in collaboration with teachers and learners to ensure e-learning that they adopt is user friendly hence useful to both the students and learners. Teachers and learners should support their TIVETs in developing an e-learning system that suits their learning needs.

#### References

[1] Abdellah, G. and Taher, S. (2007) 'Recent developments in Egyptian engineering education

through competitive projects', Formal Egyptian Government report, Egypt.

- [2] Bermejo, S. (2005). Cooperative electronic learning in virtual laboratories through forums. *IEEE Transactions on Education*, 48(1), 140-149.
- [3] Bullen, M., & Janes, D. (2007). *Making the Transition to E-Learning: Strategies and Issues*. Information Science Publishing.
- [4] Guri-Rosenblit, S. (2005). Distance education and e-learning: Not the same thing. *Higher Education*, 49(4), 467-493.
- [5] Koohang, A., & Harman, K. (2005). Open source: A metaphor for e-learning. *Informing Science Journal*, 8, 75-86.
- [6] Lee, T., & Lee, J. (2006). Quality assurance of web based e-learning for statistical education. *COMPSTAT: Proceedings in Computational Statistics: 17th Symposium, Rome*.
- [7] Li, F. W., Lau, R. W., & Dharmendran, P. (2009). A three-tier profiling framework for adaptive e-learning. *Proceedings of the 8th International*

Conference on Advances in Web Based Learning, Aachen.

- [8] Liao, H., & Lu, H. (2008). Richness versus parsimony antecedents of technology adoption model for E-learning websites. Retrieved from [http://dx.doi.org/10.1007/978-3-540-85033-5\\_2](http://dx.doi.org/10.1007/978-3-540-85033-5_2).
- [9] Ma, X., Wang, R., & Liang, J. (2008). The e-learning system model based on affective computing. In Proceedings of the Seventh International Conference on Web-based Learning. College of Computer and Information Engineering, Tianjin Normal University, China.
- [10] Marquès, P. (2006). Definición del e-learning. Retrieved from [www.pangea.org/peremarques](http://www.pangea.org/peremarques).
- [11] O'Leary, R., McFarlane, A., Timmis, S., & Greenwood, S., (2003). E-learning Strategy. Available Online [http://www.ltss.bris.ac.uk/elearning/elearn\\_strat\\_9.doc](http://www.ltss.bris.ac.uk/elearning/elearn_strat_9.doc).
- [12] Pirani, J. A. (2004). Supporting e-learning in Higher Education. EDUCAUSE Center for Applied Research. 4772 Walnut Street, Suite 206, Boulder, Colorado 80301-2538.
- [13] Singh M.P., (2005). The Practical Handbook of Internet Computing. Chapman & Hall/ CRC.