

Constraints to the Implementation and Adoption of E-Learning in Institutions of Higher Learning. A Case Study of Women's University in Africa

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Abstract: Universities in developing countries are confronted with many challenges in implementing and adopting e-learning as a medium for their teaching and learning activities in line with the new models of learning following the outbreak of the COVID-19 pandemic. The main aim of the study was to explore challenges affecting the implementation and adoption of e-learning in private Universities in Zimbabwe using Women's University as a case study. A total of 500 students and 18 lectures drawn from private universities formed the sample of the study. The study was guided by the positivism research philosophy and hence adopted a quantitative research approach. A survey data collection method was used by means of a questionnaire. The results indicated that challenges affecting the implementation and adoption of e-learning in universities are of institutional and individual nature. Institutional related challenges that emerged from the study include limited financial investment in training and awareness in e-learning learning programs among lecturers and students, lack of e-learning technologist and specialists, limited investment in procuring affordable data for lecturers and students, lack of investment in the development and maintaining of e-learning platforms and low university band width to cater for the needs of lectures and students. Individual related constraints to the implementation of e-learning from the lecturers and students' perspective includes limited access to low-cost data, poor connectivity to the university e-learning platforms and low band width causing serious delays and poor accessibility. The study concluded that the main constraints to the adoption of e-learning in private universities are mainly institutional in nature. Limited investment in the holistic development of e-learning has affected its implementation and adoption. The study recommends that universities put up huge financial investment in e-learning development. In addition, it is recommended that universities procure relevant equipment, set up reliable systems, and provide data to lecturers and students. The main contribution of this research is that it identified the main challenges that influence the successful implementation of e-learning in the private universities which may act as guide to the development of strategies to promote the effective implementation of e-learning in universities.

Key words: E-learning, implementation, adoption, challenges

I. INTRODUCTION

The transformation of higher education experienced in recent years has been stimulated by the adoption of e-

learning. There has been an increase in the number of courses and programs offered through online indicating an increase orientation towards e-learning. The e-learning modular system started in developed countries has now become a source of competitiveness among institutions of higher learning in developing countries (Innocent and Masue 2020).

The adoption of e-learning in institutions of higher learning has been stimulated by several benefits that are associated with the system. E-learning offers several benefits to learners, instructors, institutions, the education system and countries. E-learning is highly flexible in that students can learn where they want, when they want and at their own pace (Aldowah, Ghazal and Umar 2018; Innocent and Masue 2020). This means that they have access to learning course materials anytime and anywhere and hence providing motivation through active learning. Learners can balance their work, family, free time and learning activities because they have total control over their learning process (Innocent and Masue 2020). E-learning is motivational through offering personalized instruction and individualised feedback. The self-pacing and interactive nature of e-learning leads to, confidence and increased convenience to learners. It can therefore help learners think and communicate creatively. Tarus, Gichoya & Muumbo (2015) indicates that e learning enables instructors increased accessibility to information, better content delivery, personalized instruction, content standardization, accountability, on-demand availability, self-pacing, interactivity and effective monitoring and supervision of individuals' learners. The e-learning which is more easy and flexible way of education has been used as the tool in the higher education, to increase the number of students in their institutions (Wilson & Gapsiso 2014). In addition, the adoption of e-learning in universities improves the learning and teaching process through an efficient learning environment, an increase in the efficiency of teaching, enhancing students' learning (Azawei, Parslow & Lundqvist 2016). These aspects make universities competent in the delivery of their mandates by meeting the needs of their key stakeholders.

In view of these benefits, universities across the globe have increasingly turning to various electronic technologies to support and enhance their learning and teaching activities (Khan, Hossain, Hasan, & Clement 2012; Azawei, Parslow & Lundqvist 2016).

Despite the benefits e-learning can offer, the adoption of e-learning in universities especially in developing countries faces several challenges (Azawei et al 2016; Innocent and Masue 2020). Studies available revealed many challenges to e-learning adoption process in different countries. Thus, the aim of this study was to gain further understanding of the barriers and challenges hindering adoption of e-learning in private universities in Zimbabwe. According to the re-readiness for e-learning report of 2005 there was a significant awareness on the benefits of e-learning and trend towards adoption of e-learning in Zimbabwe. The same report showed in 2018 that only a few institutions of Higher learning were investing in the implementation of virtual learning environments. Although the e-readiness report of 2005 reported a significant trend of concentrating resources towards e-learning, the same noted that the use of new technologies for learning and teaching in Zimbabwe is still at a developmental significantly low. Only a few institutions of Higher learning were investing a significant portion of their resources and efforts to the implementation of e-learning. The low level of adoption of e-learning in Zimbabwean universities could be an indication of severe challenges that have affected its adoption. This is against the benefits that e-learning confers to institutions, learners and the economy in general.

This situation therefore motivated the need for this study.

II. LITERATURE REVIEW

E-learning offers several benefits to learners, instructors, institutions, the education system and countries. E-learning is highly flexible in that students can learn where they want, when they want and at their own pace Sangra, Vlachopoulos & Cabrera 2012). This means that they have access to learning course materials anytime and anywhere and hence providing motivation through active learning. Learners can balance their work, family, free time and learning activities because they have total control over their learning process (Sangra et al 2012; Innocent and Masue 2020).

Existing literature shows that a wide range of factors may hinder adoption of e-learning. The challenges to e-learning may however be broadly categorised as institutional and personal (Al-Adwan & Smedley 2012; Bhuasiri, Xaymoungkhoun & Ciganek 2012). There may further be categorised as into four main categories namely technology related factors, individual related factors, pedagogy related factors and enabling conditions related factors.

There are several institutional factors that may affect the implementation of e-learning in universities. Poor ICT infrastructure in terms of effective communication, limited connectivity, poor sources of power supply, poorly equipped

computer laboratories, limited ICT technical support units, lack of ICT policy that sets e-learning milestones, lack of support from the managements in terms of limited investment in the e-learning operations (Tarus 2015). Several empirical research studies have also confirmed the negative effects of institutional factors on the implementation of e-learning in universities (Mtebe & Raisamo 2011; Hanan Aldowah, Samar Ghazal and Irfan Umar 2018). Afshari, Kenayathulla, Idris, Ibrahim & Razak (2013) further added that institutional challenges may include lack of support to students in terms of provision of affordable and enough data. Failure to train and improve awareness on the value and operations of e-learning models may constrain its implementation. Limited financial investment in the development and sustenance of e-learning systems constrains its effective implementation and adoption.

Factors related to the stakeholders in the delivery of learning in universities may also constrain the effective implementation of e-learning in universities. Factor such as lecturer's low level ICT skills, low level of understanding and awareness of e-learning models can constrain the implementation and e-learning adoption in universities (Unwin, Kleessen, Hollow, Williams, Oloo, Alwala, Mutimucuo, Eduardo & Muianga 2010). Resistance by lecturers due to lack of training and support in terms of data and relevant laptops for the e-learning models may lead to low adoption of e-learning. Lecturers may therefore resist or avoid using e-learning systems and this may lead to institutional failure to adopt e-learning (Innocent and Masue 2020, Avidov-Ungar & Eshet-Alkarakay 2011). Lecturer's resistance to change may impinge e-learning adoption (Rolfe, Alcocer, Bentley, Milne & Meyer-Sahling 2008; Mnyanyi, Bakari, & Mbwette 2010; Nihuka & Voogt 2012). Lecturers may be reluctant to put their courses into an electronic format and prefer the traditional methods despite having access to newer technologies (Nihuka & Voogt 2012). There are a number of factors that may lead to resistance to the implementation of e-learning by lecturers such as lack of ICT e-learning skills, lack of incentives that motivate adoption, fear and attitudinal factors ((Mnyanyi et al.,2010; Saekow & Samson 2011;Teo & Ursavas 2012; Pynoo, Tondeur, Van Braak, Duyck, Sijnave & Duyck 2012).

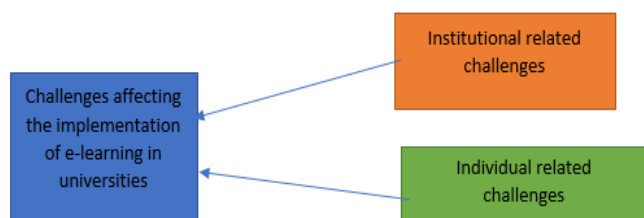
Challenges to the adoption of e-learning may emerge from the learners. Challenges related to characteristics of students in terms of technological skills to operationalise e-learning Innocent and Masue 2020. Limited technological confidence in the use of ICT systems in e-learning may retard adoption of e-learning. Limited access to e-learning support infrastructure such as relevant and updated laptops, computers and Learning Management System (LMS) may constrain the implementation of e-learning in universities. In addition, limited accessibility, reliability of internet connection and limited bandwidth are other student's related challenges that may affect effective adoption of e-learning (Innocent and Masue 2020. The higher cost of accessing the support infrastructure and data seems to be the critical hindrance

factor specifically in universities in developing countries. It has also been noted most of the Information Systems (IS) are not designed for developing countries environments, therefore, are not customized to fit the unique needs of universities, students and lecturers.

The reviewed literature shows that factors that may affect the effective implementation of e-learning may be broadly grouped as individual and institutional related challenges.

III. CONCEPTUAL FRAMEWORK

The reviewed literature showed that challenges related to the institutional factors and individual factors may affect the implementation of e-learning.



The study will focus on two main categories of challenges identified from the reviewed literature

3.1 Research objectives

- a. To establish institutional related challenges affecting the implementation of e-learning in private universities
- b. To determine individual related challenges affecting the implementation of e-learning in private universities

IV. METHODOLOGY

The study adopted the positivism research philosophy. The use of this philosophy was justified in that it generates objective and reliable findings which can be generalised to another same context. In addition, findings anchored on the positivism research philosophy are credible given the scientific analysis and interpretation. The study therefore adopted a quantitative approach in which a survey data collection method was used. A structured questionnaire was used which generated objective responses. Although there are several research designs, this study used the descriptive research design. A descriptive design portrays accurately the nature and scope of challenges affecting the implementation of e-learning in private universities. It aims at describing a situation or a problem or giving a profile of the nature of the problem and hence was relevant to this study.

V. RESULTS

5.1 Measurement scale

The participants were asked to rate their agreement of each item of the survey on a 4-point Likert Scale (except for the demographic information), where 1= Strongly Disagree, 2=

Disagree, 3= Agree, 4= Strongly Agree. The instrument consisted of 46 items.

The results in Table 1

Construct	Number of items	Cronbach's alpha
Personal	23	0.776
Institutional	23	0.712

The results in Table 1 show that alpha coefficients for all construct dimensions are high. Alpha values for all constructs exceeded the 0.70 lower limit of acceptability (Hair, Black, Babin, Anderson, & Tatham, 2006). This indicates that the instruments were reliable.

5.2 Challenges affecting the implementation of e-learning in universities

These sections present the challenges that emerged from the data collected through structured instrument

(a) Individual related challenges to the implementation of e-learning in private universities

Table 3: Responses on the nature of challenges affecting the implementation of e-learning from the lecturers' perspective

Individual related challenges	Agree	Strongly agree	Disagree	Strongly disagree
Lack of e-learning related ICT skills lectures	34%	58%	5%	3%
Lack of e-learning compatible laptops	3%	1%	88%	8%
Limited training in e-learning delivery approaches	96%	2%	1%	1%
Lack of data consistent provision of data	76%	18%	5%	1%
Poor connectivity	77%	20%	1%	2%
Lack incentives in the use of e-learning delivery approaches	1%	1%	85%	13%

The findings in table 3 shows that from the lecturer's perspective, the majority of the respondents (92%) indicated that limited e-learning skills in the delivery of their lectures was one the critical changes affecting their use of e-learning lecturing approaches and techniques. A total of about 98% also indicated that limited training in the use of their content materials in e-learning models was affecting the application of e-learning lecturing approaches and hence making it difficult to implement e-learning approaches in the delivery of learning materials. Most of the respondents (94%) indicated that lack of consistency in the provision of data for e-learning purposes by the university was also affecting the use of e-learning methods in the delivery of learning materials to students. Majority of the respondents (97%) indicated that poor connectivity with students during the delivery of e-learning lectures was a key challenge in the use of e-learning approaches in the delivery of learning material. Majority of the respondents (96%) however indicated that the use of laptops was not a challenge in the implementation of e-learning. This may be an indication that most lecturers have

compatible laptops to the e-learning model. It was also indicated by most of the respondents (98%) that limited incentives in the use of e-learning was not a challenge in the adoption of e-learning by lecturers.

Table 4: Responses on the nature of challenges affecting the implementation of e-learning from the learners' perspective

Individual related challenges	Agree	Strongly agree	Disagree	Strongly disagree
Lack of e-learning related ICT skills	1%	3%	80%	16%
Lack of e-learning compatible laptops	1%	1%	76%	22%
Limited training in e-learning learning approaches	2%	1%	67%	30%
Lack of data	56%	43%	1%	-
Poor connectivity	56%	33%	6%	5%
Poor accessibility of the University e-learning platform	59%	33%	5%	3%
Low band width causing serious delays	87%	10%	1%	2%

The findings in table 3 shows that from the learner's perspective, most of the respondents (99%) indicated that lack of data for e-learning was one the critical changes affecting their use of e-learning facilities. A total of about 89% also indicated that poor connectivity was affecting their use of e-learning lecturing facilities. Most of the respondents (92%) indicated that poor accessibility to the university e-learning platforms was also affecting their use of e-learning materials. Majority of the respondents (97%) indicated that poor connectivity with students during the delivery of e-learning lectures was a key challenge in the use of e-learning approaches in the delivery of learning material. Majority of the respondents (97%) indicated that low bandwidth was affecting their use of e-learning facilities due to serious delays and failure to connect.

The table shows that lack of e-learning related ICT skills was not a challenge in the implementation of e-learning since most of the respondents (96%) did not support this challenge. The findings of the study also indicated that lack of e-learning compatible laptops was not a challenge in the adoption of e-learning from the learner's perspective. This is since most of the respondents (97%) did not support this as a challenge in the use of e-learning.

Limited training in e-learning learning approaches was not a challenge because a total of 97% did not support this as a challenge in the use of e-learning.

The challenges of higher costs of data and the poor connectivity however emerged as the most significant challenges to the effective implementation of e-learning.

- (b) Institutional related challenges to the implementation of e-learning in private universities

Table 5: Responses on the nature of challenges affecting the implementation of e-learning from the institutional perspective

Individual related challenges	Agree	Strongly agree	Disagree	Strongly disagree
Limited financial investment in the e-learning programs	15%	76%	8%	1%
Lack of e-learning technologist and specialists	88%	8%	2%	2%
Limited investment in training and awareness in e-learning learning programs among lecturers and students	96%	2%	2%	-
Limited investment in procuring data for lecturers and students	10%	86%	3%	1%
Poor connectivity	17%	78%	2%	3%
Lack of investment in the development and maintaining of e-learning platforms	79%	11%	5%	5%
Low university band width	65%	32%	2%	1%
Resistance to change by lecturers	67%	32%	1%	-

The findings in table 3 shows that majority of the respondents (91%) indicated that limited financial investment in the e-learning programs lack of data for e-learning was one the critical changes affecting their full adoption of e-learning facilities. A total of about 86 % also indicated that lack of e-learning technologist and specialists was affecting their full use of e-learning lecturing facilities. Most of the respondents (96%) indicated that limited investment in procuring data for lecturers and students was also affecting the adoption of e-learning materials. Majority of the respondents (98%) indicated that limited investment in training and awareness in e-learning learning programs among lecturers and students was a key challenge in the use of e-learning approaches in the delivery of learning material. Majority of the respondents (97%) indicated that lack of investment in the development and maintaining of e-learning platforms. Low university band width as a challenge to the adoption of e-learning was also supported by most of the respondents (97%). Resistance to change by lecturers was also supported as one of the key impediments to the adoption of e-learning. The results in table 5 shows that the main institutional related challenges to the implementation of e-learning are limited financial and human resource support to the implementation of e-learning, lack of specialised skilled e-learning specialist to develop and manage the entire e-learning systems and platforms, limited efforts and resources towards training and promoting awareness to the value of e-learning among students and lecturers, limited investment in the procuring and provision of data to students and lecturers, low band width to serve all students and lecturers during and off e-learning activities. The results show that all the eight challenges related to the institutional factors are indeed serious impediments to the implementation of e-learning in private Universities. This may reflect the role that

institutions play to the successful implementation of e-learning in universities.

VI. DISCUSSION

This study identified learners and lecturers' views with regards to the challenges in implementation and adoption of e-learning in private universities in Zimbabwe. The study noted that the main challenges based on the views of learners were higher cost of data, non-provision of data by the university, poor connectivity to the e-learning platforms during lectures and even off lectures, poor accessibility to the university e-learning platforms and low band width which limits access to the university e-learning platforms. This finding is in line with finding findings by Yoloye (2015) and Aldowah, Ghazal Umar (2018), who noted e-learning in most developing countries are constrained by technological factors which limits students' access to e-learning. The study noted limited investment in the awareness programs and training of both lecturers and students on the requirements and skills of the e-learning were some institutional constraints to the implementation of e-learning. This finding is in line with views raised by Aldowah et al (2018) and Hadullo Omwenga (2018) who indicated that institutional related factors may act as a significant impediment to the implementation of e learning in universities. Limited financial resources to develop and sustain an effective e-learning emerged as one of the institutional constraints to the implementation of e-learning, this observation support vies raised by Tarus (2015) who suggested that limited financial resources towards e-learning affect the procurement of affordable and adequate Internet infrastructure, strong bandwidth, enough operational e-learning materials which will all impede the implementation of e-learning in universities. Alkharang & Ghinea (2013) also noted that adoption of e-learning in universities in the context of Kuwait was stalled by lack of management support in terms of resources to meet the requirements for the implementation of e-learning.

It was noted in this study some challenges to the implementation of e-learning emerged from that calibre of lecturers. This study noted that limited ICT skills, limited awareness in the use of e-learning in the delivery of lecturers, limited training in the use of e-learning systems in the lecturing process, poor connectivity and the higher cost of data were some challenges that were affecting the implementation of e-learning in private universities. These findings are in line with findings from a study done by Wang and Cowie (2008) on challenges of e-learning for University Instructors in Taiwan. The study noted that lecturers faced challenges such as having limited technological skills, having little or no formal training in the effective use of e-learning technological resources and computer anxiety in the early stages of e-learning adoption. The findings from this study are also in line with findings done by Mtebe (2014) on the challenges of acting e-learning adoption in in Higher Education in Tanzania where it was noted that aspects such inadequate ICT infrastructure and training of lecturers, a low

level of internet connectivity and limited awareness and buy in from lecturers were a hindrance to the effective implementation of e-learning in universities. The findings also support views raised by Hanan et al (2018) who also indicators instructors as sources of challenges in the implementation of e-learning.

It can therefore be concluded that based on this study and the existing body of knowledge on e-learning adoption in universities, the main challenges emerge from learners, lecturers and the universities themselves. It can be concluded that the changes to the implementation of e-learning are therefore multifaceted and may require a comprehensive strategic approach. This research has thus helped decision makers of the universities to appreciate that nature and scope of challenges affecting the implementation of e-learning especially in the face of COVID-19 which has put more pressures in the adoption of e-learning given its capacity to help countries manage the spread of the pandemic. An understanding of the challenges then guides the development of relevant strategies to enhance effective implementation of e-learning. It is therefore recommended that universities put up more resources and efforts in ensuring that all critical agents to the implementation of e-learning are well trained and prepared for the process of implementation. Investment in human resources training, procurement of relevant ICT infrastructure, provision of cheaper data, widening the university bandwidth, improving on connectivity and establishing partnership with other universities and network providers may help reduced the impact of the challenges identified.

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REFERENCES

- [1] Afshari, M., Kenayathulla, H. B., Idris, A. R., Ibrahim, M. S., & Razak, A. Z. A. (2013). Factors affecting the effective implementation of e-learning in educational institutions. *Turkish Online Journal of Science & Technology*, 3(3).
- [2] Al-Adwan, A., & Smedley, J. (2012). Implementing e-learning in the Jordanian Higher Education System: Factors affecting impact *International Journal of Education and Development using Information and Communication Technology*, 8(1), 121-135.
- [3] Alkharang, M. M., & Ghinea, G. (2013). E-learning in Higher Educational Institutions in Kuwait: Experiences and Challenges. *E-learning*, 4(4).
- [4] Avidov-Ungar, O. & Eshet-Alkakay, Y. 2011. "Teachers in a World of Change: Teachers' Knowledge and Attitudes towards the Implementation of Innovative Technologies in Schools", *Interdisciplinary Journal of E-Learning and Learning Objects (IJELLO)*, vol. 7, pp. 291-303.
- [5] Azawei, A., Parslow, P., & Lundqvist, K. (2016). Barriers and Opportunities of E-Learning Implementation in Iraq: A Case of Public Universities
- [6] Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Rho, J. J. & Ciganek, A. P. 2012. "Critical success Barriers and strategies on adoption of e-learning 135 factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty", *Computers and Education*, vol. 58, no.2, pp. 843-855.

- [7] Dweik, B. S., & Awajan, N. W. (2013). Factors that Enhance English Language Teachers' Motivation in Jordanian Secondary Schools. *English Linguistics Research*, 2(1), p33.
- [8] Innocent, W.A. and Masue, O.S (2020). International Journal of Education and Development using Information and Communication Technology (IJEDICT), 2020, Vol. 16, Issue 2, pp. 242-249 Applicability of E-learning in Higher Learning Institutions in Tanzania Willy A. Innocent Mbeya University of Science and Technology, Tanzania Orest S. Masue
- [9] Khan, M., Hossain, S., Hasan, M., & Clement, C. K. (2012). Barriers to the Introduction of ICT into Education in Developing Countries: The Example of Bangladesh. *Online Submission*, 5(2), 61-80.
- [10] Landell, K. (1997). *Management by menu*. London: Wiley and Sons Inc.
- [11] Mnyanyi, C., Bakari, J. & Mbvette, T. S. 2010. "Implementing e-learning in higher open and distance learning institutions in developing countries: the experience of the Open University of Tanzania", Fifth International Conference of Learning International Networks Consortium (LINC), Massachusetts Institute of Technology.
- [12] Mtebe, J. S. & Raisamo, R. 2011. "Challenges and Instructors' Intention to Adopt and Use Open Educational Resources in Higher Education in Tanzania", *The International Review of Research in Open and Distance Learning (IRRODL)*, vol. 15, no. 1, pp. 249-271.
- [13] Naresh B, Dr. Bhanu Sree Reddy *International Journal of Emerging Research in Management & Technology* ISSN: 2278-9359 (Volume-4, Issue-6) Challenges and Opportunity of E-Learning in Developed and Developing Countries- A Review
- [14] Nihuka, K. A. & Voogt, J. 2011. "Instructors and Students Competences, Perceptions, and Access to E-Learning Technologies: Implications for Implementation at the Open University of Tanzania", *International Journal on E-Learning*, vol. 10, no. 1, pp. 63-85.
- [15] Pynoo, B., Tondeur, J., Van Braak, J., Duyck, W., Sijnave, B. & Duyck, P. 2012. "Teachers' acceptance and use of an educational portal", *Computers and Education*, vol. 58, no. 4, pp. 1308-1317.
- [16] Robert Oboko and Elijah Omwenga (2018) *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, Vol. 14, Issue 1, pp. 152-163 Factors affecting asynchronous e-learning quality in developing countries. A qualitative pre-study of JKUAT University Kennedy Hadullo Technical University of Mombasa, Kenya
- [17] Rolfe, V.E., Alcocer, M., Bentley, E., Milne, D. & Meyer-Sahling, J. 2008. "Academic staff attitudes towards electronic learning in Arts and Sciences", *European Journal of Open Distance Learning (EURODL)*, pp. 01-06.
- [18] Saekow, A. & Samson, D. 2011. "E-learning Readiness of Thailand's Universities Comparing to the USA's Cases", *International Journal of e-Education, e-Business, e-Management and e-Learning*, vol. 1, no. 2, pp.126-131.
- [19] Sangra, A., Vlachopoulos, D. & Cabrera, N. 2012. "Building an Inclusive Definition of E-Learning: An Approach to the Conceptual Framework", *International Review of Research in Open and Distance Learning*, vol. 13, no. 2, pp. 145-159.
- [20] Saari, H. A., & Rashid, A. M. (2013). Competency level of employability skills among the apprentices of the national dual training system: a comparative analysis of industry perception by company status. *International Journal of Education and Research*, 1(11), 1-12.
- [21] Tarus, J. K., Gichoya, D., & Muumbo, A. (2015). Challenges of implementing e-learning in Kenya: A case of Kenyan public universities. *The International Review of Research in Open and Distributed Learning*, 16(1).
- [22] Tarus, J., K. (2015). Challenges of Implementing E-Learning in Kenya: A Case of Kenyan Public Universities.
- [23] Teo, T. & Ursavas, O. F. 2012. "An Assessment of Pre-Service Teachers' Technology Acceptance in Turkey: A Structural Equation Modelling Approach", *The Asian-Pacific Education Researcher*, vol. 21, no. 1, pp. 191-202.
- [24] Unwin, T., Kleessen, B., Hollow, D., Williams, J. B., Oloo, L. M., Alwala, J., Mutimucuo, I., Eduardo, F. & Muianga, X. 2010. "Digital learning management systems in Africa: myths and realities", *Open Learning: The Journal of Open, Distance and e-Learning*, vol. 25, no. 1, pp. 05-23.
- [25] Wang, S.-C., Cowie, B., & Jones, A. (2008). Challenges of e-learning for university instructors in Taiwan. Paper presented at the The 16th International Conference on Computers in Education (ICCE 2008). Taipei, Taiwan.
- [26] Wang, S., and Cowie, B. (2008). Challenges of e-Learning for University Instructors in Taiwan
- [27] Wilson, J., & Gapsiso, N. D. (2014). Achieving the Millennium Development Goals in Africa: Harnessing E-Learning Potentials. *Developing Country Studies*, 4(15), 28-34.
- [28] Yoloye, E. O. (2015). New Technologies For Teaching and Learning: Challenges For Higher Learning Institutions In Developing Countries. *Information Communication Technology (ICT) Integration to Educational Curricula: A New Direction for Africa*, 250. Submit Date: 10.07.2018, Acceptance Date: 22.08.2018, DOI NO: 10.7456/1080SSE/155 Research Article - This article was checked by Turnitin Copyright © The Turkish Online Journal of Design, Art and Communication