

INVESTIGATING THE AVAILABILITY, ACCESSIBILITY AND USE OF E-LEARNING RESOURCES BY UNDERGRADUATE STUDENTS IN UNIVERSITY OF ILORIN, KWARA STATE

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Abstract *The availability and use of e-learning resources in the acquisition and transfer of knowledge have been observed as a steering agent that facilitates the realisation of major educational benefits in a developing economy. This study investigated the availability, accessibility, and use of e-learning tools by undergraduate students in the University of Ilorin, Nigeria, including the challenges limiting the full exploitation of e-learning resources for optimal usage and efficient e-service delivery. The methodology adopted for this research was purely survey design using the questionnaire approach as the main instrument for data collection. From the findings, limited availability, accessibility and usage of e-learning resources by the undergraduate students were revealed. The findings further showed that the major challenges hindering the effective use of e-learning resources amongst University of Ilorin students include lack of sophisticated e-learning resources such as teleconferencing, video conferencing, virtual classroom among others and high cost in the procurement of facilities that support e-learning. Based on these findings, recommendations are made towards addressing the challenges encountered by students in the utilisation of e-learning resources in higher institutions of learning.*

Keywords: E-learning Resources, Infrastructures, Availability, Accessibility

INTRODUCTION

E-learning resources are becoming increasingly popular and relevant in today's institutions of learning due to the immense benefits and gains that accrue from its use and adoption in a developing economy. It is a fact that the quality and robustness of educational resources ranging from primary to tertiary institutions impacts positively on the economic growth, earnings and productivity in a growing economy (LaRocque, 2003). Therefore, the integration of Information and Communication Technologies (ICTs) in education is playing a major role in the effective use of e-learning resources, thereby transforming the social and economic development of a nation (Klass, 2006). Quite a number of studies have identified the benefits of ICTs in education such as meeting the learning needs of students, promoting equal opportunity, promoting independence of learning among learners, collaboration, enhanced communication, linking and networking to other institutions of learning within and outside its environment (for instance, Thorpe, 1998;

Klass, 2006; Ndume *et al.*, 2008). Despite these benefits, the use of e-learning resources especially in the African Educational system is posed with challenges which can be surmounted only if proper steps are taken in addressing these developmental challenges (Ndume *et al.*, 2008). One of the major challenges hindering the effective utilisation of e-learning resources in institutions of learning is providing ICT infrastructure as support to drive the effective utilisation of e-resources in the maximisation of its fullest advantage (Klass, 2006). In essence, support issue is a critical factor in the continued growth and success of e-learning in higher education (Arabasz *et al.*, 2003).

STATEMENT OF THE PROBLEM

The full exploitation of e-learning resources in institutions of learning in developing countries has not been realised due to lack of continued infrastructural support by these institutions. There is a wide gap in the provision of ICT infrastructures across institutions of learning in developing countries to

enhance the effective utilisation of e-learning resources due to reasons such as lack of management support, technology, resource availability, accessibility, culture of education, learning style among others (Ndume *et al.*, 2008). Other factors are personally driven such as lack of confidence and experience with computers, lack of time management skills and self motivation (Pirani, 2004), lack of user touch and feel in their e-learning platforms (Allen, 2003; Ostlund, 2005). Due to disparities in the challenges posed in the utilisation of e-learning resources experienced by Institutions of learning in developing countries, the overall objective of this study is to investigate the available e-learning resources, level of accessibility and use by students in the University of Ilorin, Kwara State, Nigeria.

Based on this premise, the following research questions are addressed in this study

- (i) What are the available e-learning resources utilised by students?
- (ii) How often are e-learning resources accessed by students?
- (iii) What are the challenges encountered in the effective utilisation of e-learning resources by students?
- (iv) What are the benefits of e-learning resources to students?

Specifically, the following sub-objectives will be given prominence in this study:

- (i) To determine the available e-learning resources utilised by students;
- (ii) To find out the level of access to e-learning resources;
- (iii) To determine the challenges encountered in the utilisation of e-learning resources;
- (iv) To determine the benefits of e-learning resources to students;
- (v) Suggestions on policy options and strategies in improving the utilisation of e-learning resources in institutions of learning.

ADOPTION OF E-LEARNING IN INSTITUTIONS OF LEARNING

E-learning has been defined from different perspectives in the literature. For instance, Oblinger and Hawkins (2005) defined e-learning as online courses involving interaction between faculty and students. Another definition of e-learning is computer-based training engaged over the internet and intranet (Dublin, 2003). Similarly, Stockley (2005) defined e-learning extensively as the delivery of learning, training or educative programme through an electronic means or device such as computer, mobile phones, Internet, or intranet to provide training, educational and

learning materials. Another definition of e-learning adopted by the European Commission (2001) as the application of multimedia technologies and the internet to improve the quality of learning through access to facilities and services as well as remote exchanges and collaboration. Arabasz *et al.* (2003) also connote e-learning as the combination of the three types of learning which include online distance learning courses, traditional courses supplemented with technology and hybrid courses respectively.

These definitions of e-learning have revealed that irrespective of the type of e-learning, the utilisation of e-learning resources are technologically driven by ICT infrastructures such as computers, broadband connectivity, satellite, large bandwidth among others.

Adoption and use of e-learning resources by students in institutions of learning in the developing countries have improved especially in this information age, though at a slow pace compared to what obtains in the developed world. According to literature, some authors in developing countries have investigated e-learning in various dimensions, and their studies have revealed a low adoption of e-learning amongst students in higher institutions of learning, instead there are more cases of blended learning due the challenges that go with the use of e-learning resources such as low bandwidth, lack of funds, lack of internet connectivity, lack of skilled students and personnel among others (Bassey *et al.*, 2007; Ndume *et al.*, 2008). As the level of adoption of e-learning in institutions of learning is gradually improving, institutions of learning are struggling to meet the set standard for the successful implementation of e-learning such as procuring adequate, reliable and robust technical infrastructure to support e-learning activities; instructors and students possessing technical skills to use e-learning tools; and instructors redesigning their courses to incorporate e-learning into their pedagogy (Arabasz *et al.*, 2003). Also, e-learning infrastructure such as system and application software, Internet service providers (ISPs), reliable bandwidth, policy framework and security infrastructures are indispensable for the successful implementation of e-learning in institutions of learning (Murali and Rao, 2009).

CHALLENGES FACED BY STUDENTS IN THE ADOPTION OF E-LEARNING IN A DEVELOPING ECONOMY

E-learning adoption by students are determined by their readiness and satisfaction derived from the quality of service offered by their respective institutions (Kasse and Balunywa, 2013). The quality of e-learning services offered to students differ across institutions of learning in developing countries due to the level of implementation and acceptance by the leadership of these institutions. Therefore,

available e-learning infrastructure will play a significant role in determining the level of accessibility of e-learning resources by students and lecturers.

The challenges faced by students in the adoption of e-learning in developing countries have been categorised into infrastructural, technical and attitudinal factors by authors spanning across African countries (Abdel-Wahab, 2008; Gounlund and Islam, 2010; Eke, 2011). For instance, some e-learning studies have revealed lack of vision and framework in implementing e-learning has led to failures in various dimensions (Kizito and Bjan, 2006; Pal, 2006). In the same vein, lack of technical and social skills required for successful implementation, lack of concentration, motivation on the part of students due to inability to use e-learning resources and distraction due to involvement in domestic activities (Ostlund, 2005). According to e-learning Africa report (2012), constraints such as limited bandwidth, lack of financial resources, inadequate human resource capacity and limited electricity were identified as common challenges encountered in the implementation of e-learning in Africa. Other constraints such as perceived ease of use of e-learning, perceived usefulness, availability of resources determine students' intention to adopt e-learning in higher institutions of learning (Abdel-Wahab, 2008). These attitudinal challenges may be addressed by training and retraining of students and instructors through interactive forums and enlightenment programmes such as workshops, conferences and short courses.

Specifically, empirical investigations on e-learning programmes in Institutions of learning have been reported in the literature. Bassey (2007) investigated Nigerian graduating students' access to e-learning resources in the south-south Nigeria. Results of the survey revealed the challenge of access to e-learning technology due to non-availability of these technologies. This shows that accessibility to e-learning technology is vital for acquisition of knowledge and information dissemination as well as interaction between lecturers and students. Accessibility to technology therefore, has become an indispensable element in the effective implementation of e-learning programmes in institutions of learning (Ribiero, 2002).

Similarly, in a study conducted by Ndume, Tilya, and Twaakyondo (2008), they identified challenges militating against adaptive e-learning in institutions of learning in Tanzania which include lack of management support, methodology, culture of education and learning styles technology, resource availability and accessibility among others. Akuchie (2008) also conducted a survey in five universities in the North Central Zone of Nigeria. Findings revealed that lecturers and students are not skilled in the use of Information and Communication Technologies (ICTs); and more so, the e-learning facilities that existed were not adequate and functional for use in the surveyed universities.

This hindered their accessibility and use of e-learning resources due to the lack of support by ICT infrastructures. Madu and Pam (2011) also investigated the inhibitors to the use of e-learning facilities by the students in the Federal University of Technology, Minna, Niger. Findings revealed that the greatest challenge was power outage, followed by inadequate e-learning facilities and inadequate funding. Other inhibitors include obsolete infrastructure, lack of skilled manpower, and poor infrastructure.

A critical assessment of the various challenges of e-learning as identified in the literature show that it revolves around the leadership style in most of these institutions. The role played by institutional leaders in the successful implementation of e-learning projects cannot be overemphasised. Therefore, lack of leadership orientation in Institutions of learning can be considered as one of the major challenges to successful implementation of e-learning programmes (Thorpe, 2007). Leadership problems could manifest in the form of lack of understanding and vision of what e-learning could achieve for the institution, and insufficient recognition of the resources required for successful implementation are exhibited by institutional leaders (Harries *et al.*, 2007). Therefore, institutional leadership is a determinant of the quality of decision making that could facilitate or impede successful e-learning implementation within institutions of learning (Mapuva, 2009).

THEORETICAL FRAMEWORK

In a developing economy such as Nigeria, challenges confronting institutions of learning are reflected in the area of availability, accessibility and use of e-learning resources by students. The appropriate theory that determines the availability, accessibility and use of e-learning resources adequately is the socio-technical systems theory proposed by Molleman and Broekhuis, (2001). According to this theory, the socio-technical system is the integration of two interdependent sub systems, namely the social system and technical system. The social system encompasses the operating environment put in place for the successful implementation of e-learning programmes such as organisational culture, interpersonal relations, values, beliefs, motivations, interactive patterns, learning and adaptability to changes. On the other hand, technical system constitutes mechanical facilities, technical methods and professional knowledge (Molleman and Broekhuis, 2001). The relevance of this theory in the successful implementation of e-learning in institutions of learning coupled with the adoption and use of e-learning resources is of paramount interest. Based on this theory, e-learning outcomes such as usability and e-learning performance are based on the technical and social support conditions underlying e-learning. Other conditions include ease of use, media richness, extrinsic motivation,

learning climate, learning attitude which are determinants of successful learning outcomes or otherwise. It is believed that social-technical system for e-learning in institutions of learning must be upgraded regularly and examined from time to time to detect problems that may disable the successful implementation of e-learning programmes.

METHODOLOGY

The methodology adopted for this study was a survey design using a structured questionnaire as the main instrument for data collection. The questionnaire was divided into three sections: Section A captured the demographic information of the students; Section B majored on types of e-learning resources available to students for acquisition and transference of knowledge; and Section C constituted items measuring level of accessibility, barriers and benefits of e-learning resources to students. The content validity of the questionnaire items were confirmed by two experts in the field of Information and Communication Technologies (ICTs). Also reliability measures were established for the sub scales which revealed a Cronbach alpha of 0.7 and above for the sub scales.

Population of Study

The target population for this study were undergraduate students of the University of Ilorin selected randomly from two faculties in the university which are the Faculty of Business and Social Sciences (BSS) and the Faculty of Communication and Information Sciences (CIS) respectively based on their familiarisation with e-learning resources than other faculties. Students were selected from a total of six departments emanating from the two Faculties which included department of Information and Communication Science (ICS), Library and Information Sciences (LIS), Telecommunication Science (TCS), Business Administration (BA), Finance (FIN), and Accounts department (ACC) respectively. A total of 30 students were randomly selected from each of the department to make a total of 180 respondents.

Method of Data Collection

A total of 180 questionnaires were distributed directly to the students randomly selected from the two Faculties. Out of 180 questionnaires administered, 150 were valid with complete information amounting to a return rate of 83.3%. The remaining 30 questionnaires were invalid due to lack of completeness of the questionnaires filled by the respondents.

Demographic Information of the Respondents

The respondents comprised 92 (61.3%) males and 58 (38.7%) females; while 40 (26.7%) were aged between 15 and 20 years, 96 (64.0%) between 21 and 25, 12 (8.0%) between 26 and 30 years and 2 (1.3%) between 30 years and above. The majority of the respondents were male students in the age category of 15 -20 years.

Data Analysis and Presentation

Field data collected was analysed through the Statistical Package of Social Sciences (SPSS) using descriptive statistics such as frequencies and percentage counts to analyze the commonalities that are peculiar with students' use of e-learning resources. Data were analyzed in line with the sub objectives of this study as highlighted in the tables below:

Table 1: Types of Available E-learning Resources Utilised by Students

Available e-learning Resources	Frequency	Percentages
Internet	143	95.3%
Mobile Learning	80	53.3%
Video Conferencing	12	8.0%
Teleconferencing	19	12.7%
Blogs	57	38.0%
Web Chat	44	29.3%
Library Databases	60	40%
Web Content	46	30.7%
Virtual Classroom	29	19.3%
Online Discussion Groups	76	50.7%
Computer Aided Instruction	42	28.0%
E-learning application software	60	40%
Computer Based Test (CBT)	107	71.3%
Internet Based Test (IBT)	49	32.7%
CD/DVD ROM	70	46.7%
Hand Held Computers	42	28.0%
Mailing Systems	53	35.3%

Table 1 reveals the available e-learning resources to students in varying proportions. The frequently used e-learning resources by the students ranging from 40% and above included Internet (95.3%), Computer based Test (71.3%), Online discussion groups (50.7%), Mobile learning (53.3%), E-learning application software (40%), Library databases (40%), while the less frequently used e-learning resources below 40% included Teleconferencing (12.7%), Video conferencing (8.0%), Virtual classroom (19.3%), Hand held computers (28.0%) among others. The frequently used e-learning resources were easily accessible to students for information seeking, transfer of knowledge, and as communication channels to enhance interaction among themselves. On the other hand, the less frequently used e-learning resources were not accessible to students due to

problem of availability mostly caused by high cost in the procurement and maintenance of the required infrastructure. Internet was the most frequently used and accessible e-learning resource by the students due to the free access given to students on campus by the school authorities.

Table 2: Frequency of Accessibility to E-learning Resources by Students

Access Level	Frequency	Percentage
Rarely	35	23.3%
Once-Twice a week	28	18.7%
Three times and Above	29	19.3%
Always	55	36.7%

Table 2 reveals that students' accessibility to e-learning resources was relatively low due to reasons of inadequate and non-availability of essential e-learning resources. For instance, 36.7% accessed e-learning resources on daily basis, 23.3 % accessed e-learning rarely, 18.7% accessed once or twice a week while 19.3% accessed more than three times in a week. The low accessibility to e-learning resources by students is an indication that the free access enjoyed by students was affected by challenges such as network failures, lack of internet connectivity, inadequate e-learning resources among others. Therefore, considering the available e-learning resources coupled with robust infrastructural support will improve the accessibility level of students.

Table 3: Barriers to the effective Utilisation of E-learning Resources by Students

Barriers	Frequency	Percentage
Erratic Power Supply	74	49.3%
Lack of infrastructure	68	45.3%
Lack of interest	38	25.3%
Non-availability of e-learning resources	36	24.0%
Inadequate e-learning resources	43	28.7%
Lack of Internet Connection	74	49.3%
Constant network failure	94	62.7%
High cost of accessing e-learning resources	62	41.3%
Lack of computer facilities	54	36.0%
Lack of time	59	39.3%

As revealed in Table 3, the barriers hindering the effective utilisation of e-learning resources were identified by students in varying degrees. The barriers commonly reported were Constant network failure (62.7%), Lack of Internet connection (49.3%), Erratic power supply (49.3%), Lack of infrastructure (45.3%), and High cost of accessing e-learning resources (41.3%) respectively. E-learning resources generally are driven by a high level of infrastructural support, therefore, the lack or inadequate infrastructure will account for regular problems relating to network failures,

internet connection, and erratic power supply among others as indicated by the students. These barriers accounted for the low accessibility to e-learning resources experienced by students.

Table 4: Benefits of e-learning Resources to Students

Benefits	Frequency	Percentage
Increased knowledge	135	90%
Wide collaboration among students	76	50.7%
Wide dissemination of Information	83	55.3%
No barrier to knowledge acquisition	60	40%
Effective learning	110	73.3%
High level of exposure to students across institutions locally and internationally	81	54.0%
Exchange programmes across institutions	44	29.3%
E-learning resources make assignments easy	110	73.3%
Deadlines are met through the use of e-learning resources	93	62.0%
Easy comprehension of difficult courses through the use of e-learning resources	81	54.0%

According to Table 4, the benefits of e-learning were categorised into personal, inter-personal and institutional benefits. Findings revealed that majority of students are driven by personal benefits gained from the use of e-learning resources such as (90%) increased knowledge, (73.3%) effective learning, (73.3%) assist greatly in their assignment and (62.0%) meeting deadlines. Out of all the identified benefits of e-learning, (29.3%) indicated they benefited from exchange programmes across Institutions revealing that the lack of sophisticated ICT infrastructure such as high speed broadband, video conferencing, teleconferencing could have contributed to the minimal exchange programmes across institutions in Nigeria.

DISCUSSION OF FINDINGS

Students' use of E-learning resources has become an essential part of learning in most Institutions of learning. However, findings from this study has revealed limited availability, low accessibility due to quite a number of challenges encountered by students of the University of Ilorin in their utilisation of e-learning resources. The findings from this study are discussed in line with the objectives as stated below:

(a) Available e-learning resources utilised by students

As revealed in Table 1, the available e-learning resources utilised by the students are the commonly used which

include Internet (95.3%), Computer based Test (75.3%), Online discussion groups (50.7%), Mobile learning (53.3%) E-learning application software (40%), Library databases (40%), while the less commonly used e-learning resources include Teleconferencing (12.7%), Video conferencing (8.0%), Virtual classroom (19.3%). An overall assessment reveals that e-learning resources utilised by students of the University of Ilorin are still limited. Sophisticated e-learning resources such as teleconferencing, video conferencing, virtual classroom are rarely used by students due to the non-availability of these resources. Although, the leadership of University of Ilorin recognises the importance of e-learning resources to the growth and development of students intellectually, the use of these resources has not been given the utmost priority it requires. However, the most frequently used and available resource is the Internet (95.3%) followed by Computer based test (CBT) (75.3%) often used in conducting examinations for students in courses with larger population. The limited availability of e-learning resources is not different from what obtains in other Institutions of learning surveyed in developing countries except in the area of type of resources and infrastructural support (e-learning in Africa, 2012).

(b) Frequency of access to e-learning resources

Accessibility to e-learning resources was relatively low due to the limited available resources utilised by students. For instance, (36.7%) accessed e-learning resources on daily basis, (23.3 %) accessed e-learning rarely, (18.7%) accessed once or twice a week while (19.3%) accessed more than three times in a week. This finding is in line with similar studies that have revealed that accessibility to e-learning resources had been a constant problem in institutions of learning in developing countries due to infrastructural challenges (Akuchie, 2008; Madu and Pam, 2011).

(c) Barriers Encountered by Students in the Utilisation of E-learning Resources

As revealed in Table 3, the barriers hindering the effective utilisation of e-learning resources were identified by students in varying degrees. The barriers commonly reported were Constant network failure (62.7%), Lack of internet connection (49.3%), Erratic power supply (49.3%), Lack of infrastructure (45.3%), and High cost of accessing e-learning resources respectively. E-learning resources are driven by robust infrastructure, therefore, the lack or inadequate infrastructure will account for regular problems relating to network failures, internet connection, and erratic power supply among others by students. Similar challenges have been reported in the literature as hindering the effective utilisation of e-learning resources by students in developing countries (Akuchie, 2008; Madu and Pam, 2011).

(d) Benefits of e-learning resources to students

Findings revealed that majority of students in the University of Ilorin are driven by personal benefits gained from the use of e-learning resources such as (90%) increased knowledge, (73.3%) effective learning, (73.3%) assist easily in their assignment and (62.0%) meeting deadlines. However, (29.3%) benefited minimally from exchange programmes across Institutions due to the inadequate or the non availability of robust infrastructures such as high speed broadband, video conferencing and teleconferencing among others. Problems such as irregular power supply, constant network failures, and Internet connectivity are contributing factors. Cross- institutional benefits have not been fully achieved due to lack of infrastructure such as video conferencing, teleconferencing that would facilitate this process. Therefore, the benefits of e-learning reported by the students so far cannot be dissociated from the available e-learning resources and the adequacy of the infrastructure that supported e-learning,

CONCLUSION AND RECOMMENDATIONS

The adoption of e-learning in institutions of learning will continue to improve and contribute immensely to educational growth and development of any nation. However, institutions of learning in developing countries are battling with peculiar challenges in the area of availability, accessibility and use of e-learning resources as experienced by students of the University of Ilorin compared to their counterparts in the developed world. In spite of the challenges posed, the personal benefits realised from the utilisation of e-learning resources by students have been quite impressive which pinpoints to the possibility of outstanding improvements and fundamental changes in the implementation of e-learning programmes in institutions of learning.

In combating these challenges militating against successful implementation of e-learning, stakeholders such as Government, university administrators, students and tutors need to be actively involved in the successful implementation of e-learning programmes in institutions of learning in Nigeria. In view of this, the following recommendations should be considered:

Government should design policies that will facilitate the continual funding of e-learning resources in institutions of learning in Nigeria. Government should collaborate with international agencies such as World Bank, United Nations Organizations to assist Institutions of learning in the procurement of robust ICT infrastructure that will drive and sustain its successful implementation and utilisation. The procurement of sophisticated infrastructure is one of the major ways of addressing the challenges militating against

accessibility and use of e-learning resources by students and efficient e-service delivery in institutions of learning.

Also, university administrators should exhibit keen interest in the successful implementation of e-learning in institutions of learning. The leadership of these institutions must recognise the need for a vision and appropriate framework for successful e-learning. On this account, administrators must also look inward to get adequate funds for infrastructural support, training and re-training of personnel, curriculum development, and devise strategies of usage for quality assurance.

In conclusion, challenges in the area of availability, accessibility and use of e-learning resources should be given utmost priority by the Government and university administrators for the successful implementation in institutions of learning in Nigeria. By this, the challenges militating against the full exploitation of e-learning resources, optimal usage and efficient e-service delivery in Institutions of learning are managed successfully.

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