

USE OF ELECTRONIC INFORMATION RESOURCES FOR SUSTAINABLE DEVELOPMENT OF OPEN AND DISTANCE LEARNING PROGRAMMES IN NIGERIAN UNIVERSITIES

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Abstract

The study investigated the availability of electronic information resources for sustainable development of Open and Distance Learning (ODL) in Nigeria universities. The nature of learning has changed due to the advent of ICTs and the emergence of new technologies. The need to sustain the development of ODL calls for adequate provision of electronic resources to match the growing information needs of students. The study used a survey research design. A sample of 400 students was drawn from twelve conventional universities offering distance learning programmes in Nigeria. Purposive random sampling technique was used to select the participants. Data was collected using a self-structured questionnaire and analysed using descriptive statistics of frequency counts, percentages, mean and standard deviation. Findings showed that e-books, online databases, e-journals, e-references were available, adequate and accessible in the libraries under study. The e-resources brought about improved learning outcomes and up-to-date information. To sustain the provision of e-resources for Open and Distance Learning, infrastructural development, policy-making and implementation are germane. Financial constraint pose a serious challenge to e-resources provision and utilization. Therefore, recommendations were made for improved library budget and infrastructural development to sustain access to e-resources by the students.

Keywords: Electronic information resources, Library, Nigerian universities, Open and Distance Learning (ODL), Sustainability.

Introduction

Open and Distance learning (ODL) is the form of education where students rarely come in physical contact with teachers. Sewart, Keegan and Holmberg (2020) define distance learning as a form of education, which brings together the physically distant learner(s) and the facilitator(s) of the learning activity around planned and structured learning experiences via

various two or multi-way mediated channels that allow interactions among learners, facilitators as well as between learners and educational resources. In Nigeria, distance education is set up to provide access to quality education and equity in educational opportunities for those who would have been denied (Federal Republic of Nigeria, 2004).

ODL is flexible in terms of organizational structures, delivery and communication patterns, and makes use of various technologies to support learning (Okebukola, 2014). To this end, National Open University of Nigeria was established. Moreover, conventional universities in Nigeria also offer distance education to people irrespective of age, sex, origin and place. In most universities, centres that manage distance learning are commonly referred to as Distance Learning Institute, Distance Learning Centre or Distance Study Centre. With the advent of digital technology, the programme leverages on the use of Information and Communication Technologies (ICT).

Providing information resources for teaching, learning and research is the mandate of academic libraries. University libraries provide learning spaces and set up electronic libraries for users. This is possible through the acquisition of various information and communication technologies (ICTs) in the library. Nigerian university libraries also form a consortium in acquiring various online databases in various disciplines. They come in different forms: physical, digital and electronic. Electronic information resources also known as e-resources can be seen as resources in digital form that can be accessed using electronic devices like computers. The nature of learning has changed due to the advent of ICT and the emergence of new technologies. The need to sustain the development of Open and Distance Learning (ODL) calls for adequate and consistent provision of e-resources to match the growing information needs of students.

However, it has been observed and found that some of these resources are either not available or inadequate. Adedokun and Babalola (2018) posited that there cannot be effective distance learning without the application of ICT both in the teaching and learning processes, as a means of accessing electronic information.

Information resources come in different formats and are needed in education. Students as well as lecturers need information resources to learn, teach, and to research. Print and electronic information resources can be used in Open and distance education. Electronic information resources, also known as e-resources comprise e-books, e-journals, e-reference, CD-ROMs, Online databases. These resources are important to students in higher institutions as they give access to up-to-date information in the right form (Adedokun & Babalola, 2018). They posited that e-resources are essential to distance education students in the achievement of success, through quality information and flexible learning. They are vital resources that support teaching, learning and research in higher institutions. However, the availability of these information resources need to be sustained if distance and e-learning should thrive.

Accessibility of information resources is the ability to see and make use of the information resources that is available in the library. Availability does not necessarily connote accessibility (Aguolu & Aguolu, 2002). Providing access to adequate library facilities and resources is paramount as stated in ACRL (2008) guidelines for distance learning library services. Gould and Gomez (2010) posited that the role of libraries is to help access information; not just information itself but the processes involved to find the needed information. As a result, distance learning students are entitled to the library services and resources of the institutions they belong.

Provision of electronic resources for distance learning in this era of globalization of education cannot be over-emphasized. How be it, for university libraries to sustain the provision of information resources, there must be consistent financial support (Gould & Gomez, 2010). Sustainability is the ability to keep a project or operation going. As regards information provision, sustainability has to do with regular, constant and improved provision of up-to-date information resources required to achieve the desired goals. To ensure sustainability of information provision, policy-making, infrastructural development, and adequate funding are necessary.

Objectives of the Study

This paper aims at investigating the sustainability of open and distance learning in Nigerian universities through the provision of Electronic information resources. Specific objectives are to:

1. identify e-resources available for Open and Distance Learning (ODL) programme in Nigerian universities;
2. determine the adequacy of available e-resources in Nigerian university libraries;
3. determine the level of access to e-resources provided by the university libraries
4. investigate the impact of e-resources on ODL programme in Nigeria;
5. ascertain the sustainability of e-resources provision by the university libraries;
6. find out the challenges of e-resources utilization in ODL programme in Nigeria.

Review of Related Literature

The emergence of the twentieth century was characterised by extensive changes in communication technologies. The appearance and the use of information technology in the 20th

century is the major advancement that has direct bearing on scholarly communication. The use of computers in the processing of information has brought several products and services to the scenes (Akussah, Asante & Adu-Sarkodee, 2015). As a result, the academic community has undergone tremendous changes during these years, assuming new dimensions influenced by technology-driven applications. Libraries have been transformed in recent years both in their collection development and in service structures. Hence, libraries are using technology to manage information and to strengthen access to scholarly information not acquired locally.

Electronic information resources as defined by Adeleke and Nwalo (2017) are information resources that are stored electronically and which can be accessed through electronic devices and networks. The first appearance of ICT to information provision, sharing and management in libraries poses a challenge to all library stakeholders to adjust their positions and actions regarding the method of creating, publishing, distribution and use of the available information in order to retain their relevance. Electronic information resources (EIR) are information resources that can be retrieved using electronic means or devices. Electronic books (e-books), electronic journals (e-journals), e-magazines, e-theses, e-newspapers, e-mail, e-research reports, and bibliographic databases are examples of EIR (Sadiku, Issa & Mohammed 2019). Availability of e-resources is vital to the provision of open and distance learning. For learning to take place, educational materials such as be provided for both teaching and learning, and in this case, electronic information. Nnadozie, Aniebo and Chukwueke (2017) carried out a research on availability of e-services in academic and special libraries in Abia State, Nigeria. It was revealed in the study that internet services and e-journals were most available and that accessibility of e-resources was low.

E-resources are available at any time of the day, provide hyperlinks to other resources, for example, inter-library lending; have huge information reservoirs, provide quick information and various search options for easy retrieval, are easy to cite, can easily be uploaded, stored, archived, distributed, shared and updated, and have flexibility features. Unlike the physical library, it has the benefit of not requiring any physical space, and because they do not wear and tear, they are cost-effective in the long run (Tekale, 2016).

Oduwole and Akpati (2003) investigated the accessibility and retrieval of electronic information at the University of Agriculture Library, Abeokuta, Nigeria. The 525 participants responded out of a survey population of 1,000 giving a response rate of 52.4 percent. The study revealed that electronic information cuts across all members of the university community; largely, it was easy to use and they were satisfied with their search outputs. The constraints identified included insufficient number of terminals available for use despite high demand and inadequate electricity supply. Ojo and Akande (2005) in a survey of 350 respondents examined students' access, usage and awareness of electronic information resources at the University College Hospital (UCH) Ibadan, Nigeria. The study revealed that the level of usage of the electronic information resources was low.

Literature has shown that a number of relevant studies have been carried out on the use of electronic resources by lecturers, research scholars and students worldwide. Generally, users' opinion on the use of electronic resources has been positive as students continue to enjoy the use of these resources with little challenges while using them (Akussah, Asante & Adu-Sarkodee, 2015). Ternenge and Kashimana (2019) carried out a study on availability, accessibility and use of e-resources by students of Francis Idachaba University of Agriculture, Makurdi. The study

revealed that e-books, e-journals, OPAC, e-reference were available in the library and that the students used the resources to a great extent. It was also found that inadequate computer facilities, poor internet connection and power outage constituted barriers to effective use of the resources.

Kumar (2016) aver that the use of e-resources improves communication, helps in career development, teaching and research. According to Edem and Egbe (2016), e-resources offer postgraduate students at the University of Calabar, Nigeria the opportunity to use relevant and current information from different subject areas. Bhati and Ganai (2017) averred that e-resources now have great impact on libraries as they have changed the functioning of libraries in higher education globally. Fyneman, Idiedo and Ebhomeja (2014) found that undergraduates in Niger Delta University in Nigeria used e-resources such as e-journals, HINARI, CD-ROMs, AGORA, and EBSCOHOST. E-resources have greatly influenced information services provided to students. Two private universities, Babcock University and Redeemer University in Nigeria, were assessed (Quadri, Adetimirin, & Idowu, 2014) on the use of e-resources. The study found out that most of the students used e-resources for assignments, research and projects, and this has resulted in improved class activities and collaboration.

In order to sustain the provision of electronic resources in ODL, some factors must to be put in place or considered for effective utilization of e-resources. Ojukwu and Mutula (2021) carried out a study on exploring the economic strategies applied for sustainable EIR provision in selected university libraries in Nigeria. The study found that University Librarians have been using some strategies like Consortium and fund raising. They averred that the current economic strategies used in sustaining EIR provision may not advance and that the University Librarians

should embark upon other strategies. One of the factors is funding; adequate budget is necessary to put all the required infrastructures and facilities in place, which will enable access to the information resources for effective teaching and learning.

Studies revealed that in Nigeria, the use of e-resources in universities was highly embraced by users generally just as it was in places like India, Pakistan, Ghana, Kenya, Sri-Lanka and the United Arab Emirates. Even though in Nigeria, the use of e-resources is not without some infrastructure and skills challenges. The constraints in e-resources use by open and distance students include slow internet connection, poor internet facilities and insufficient computers (Fyneman, Idiedo & Ebhomeja, 2014; Nnadozie, Aniebo & Chukwueke, 2017; Ugwu & Orsu, 2017; Umukoro and Tiamiyu, 2017). Bassey and Odu (2015) found out low usage of e-resources by the students of University of Calabar, Nigeria. The study also revealed lack of information retrieval skills as a major problem in utilizing electronic information resources by the students. Inadequate infrastructure was found as a constraint to accessing and utilising e-resources (Oluwaseye and Abraham, 2013; Tella, Orim, Ibrahim, & Memudu, 2018). Adedokun and Babalola, 2018 revealed financial constraint, poor internet connection and erratic power supply as barriers to effective use of e-resources by the students of National Open University of Nigeria (NOUN).

Many studies have been conducted on the availability, accessibility, use and impact of e-resources among undergraduates but studies that looked into the strategies for sustaining the provision of e-resources for open and distance learning was lacking. This study therefore, is set out to fill the gap.

Methodology

The methodology adopted for this study was survey design using a structured questionnaire to elicit responses from the respondents in the study area. Population of study comprised of undergraduate students in public universities in Nigeria undertaking distance education. There are thirteen Nigerian universities offering distance education. National Open University of Nigeria (NOUN) is dedicated to Open and Distance Learning; therefore, it was left out of the sample. This study focused on the twelve conventional universities in Nigeria offering distance education (See appendix 1). Sixty percent of the total population was considered as sample. There are nine federal, two state and one private universities in all. Purposive random sampling technique was used to select the two state, one private and five federal universities as participants of the study. Therefore, data was collected from the eight universities. Four hundred (400) questionnaires were distributed to students, out of which 256 were returned and found usable giving a response rate of 64.0 % (see Appendix A). Data was collected using self-structured questionnaire having four Sections. Descriptive statistics were used in analyzing the field data such as frequency count, mean, percentages, and standard deviation.

Result and Discussion of Findings

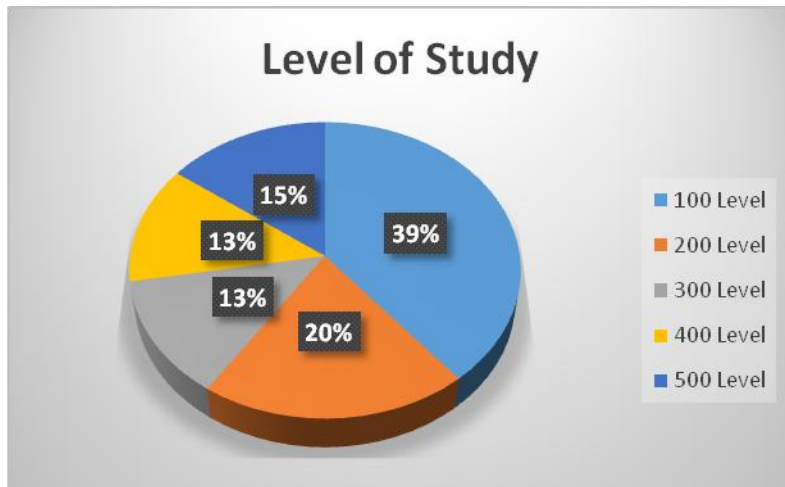
The results of analysis conducted on the data collected for the study are presented in this Section. Data was analysed using descriptive and inferential statistics, using counts, percentage, mean and standard deviation.

Demographic Information of Respondents

Figure 1 reveals the level of study the respondents were. Out of the 256 respondents, 39% were in 500 Level, 20% in 200 Level, 15% in 500 Level while 13% were recorded in each of 300 and 400 Level.

Figure 1

Respondents' Level of Study



Age range of respondents in Figure 2 revealed that the majority of the respondents fall between 16-20 years, followed by 41% in the range 21-30 years while only 5% were in 31-40 years range. This implies that the respondents were young.

Figure 2

Respondents' Age Range

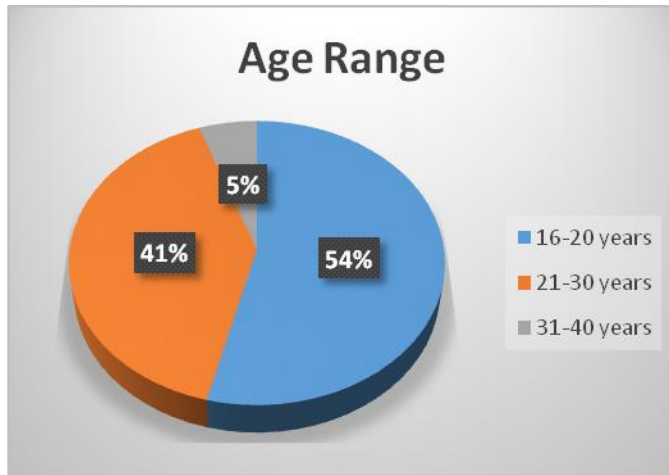
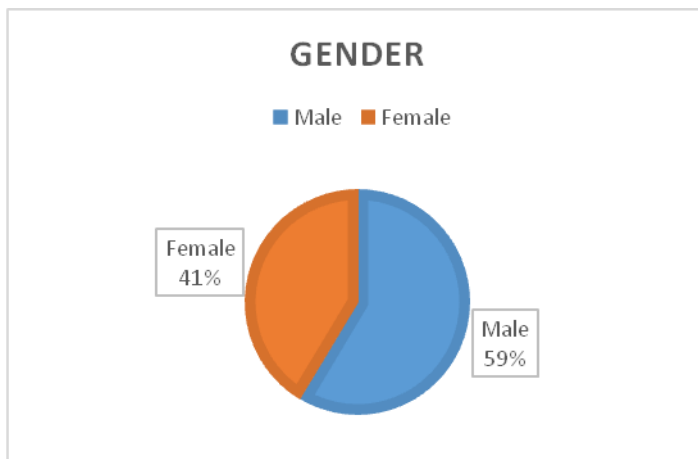


Figure 3 reveals the respondents’ gender. Male respondents constituted 59% while female were 41%. Male students were more than the female.

Figure 3

Respondents’ Gender



Availability of E-resources

Table 1: E-resources Availability (N=256)

S/N	E-Resources	Available	Not Available	Mean	Std.
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		<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>	(\bar{x})	<i>Dev.</i>
1	E-book	179	72.8	67	27.2	1.73	.446
2	Online databases	178	78.0	78	22.0	1.70	.461
3	E-journal	159	76.4	79	23.6	1.67	.472
4	E-reference	153	75.6	78	24.4	1.66	.474
5	Library OPAC	144	65.2	77	34.8	1.65	.478
6	Bulletin Board	111	62.0	68	38.0	1.62	.487
7	Archives	117	61.3	74	38.7	1.61	.448
8	CD-ROMs	77	34.5	146	65.5	1.35	.477
Grand mean		1.69					

The availability of e-resources in the respondents' libraries is presented in Table 1. It was revealed that e-books ($\bar{x}=1.73$), online databases ($\bar{x}=1.70$), e-journals ($\bar{x}=1.67$) and e-reference ($\bar{x}=1.76$) resources top the list of the available resources. CD-ROMs are not that available going by the mean value ($\bar{x}=1.33$), which is below the cut-off value of 1.5. This shows that these e-resources that support ODL are provided by the libraries. This finding corroborates studies by (Akussah, Asante and Adu-Sarkodee, 2015; Nnadozie, Aniebo and Chukwueke, 2017; Ternenge & Kashimana, 2019).

Table 2: Adequacy of E-resources in the Library (N=256)

<i>S/N</i>	<i>E-Resources</i>	<i>Adequate Freq.</i>	<i>%</i>	<i>Not Adequate Freq.</i>	<i>(%)</i>	<i>Mean (x̄)</i>	<i>Std. Dev.</i>
1.	E-book	155	79.9	39	20.1	1.80	.402
2.	Online databases	160	78.0	45	22.0	1.78	.415
3.	E-journals	155	76.4	48	23.6	1.76	.426
4.	E-reference	152	75.6	49	24.4	1.76	.430
5.	Library OPAC	137	72.5	52	27.5	1.72	.448
6.	Bulletin Board	134	71.7	52	28.3	1.72	.452
7.	Archives	128	59.0	89	41.0	1.59	.493
8.	CD-ROMs	112	49.1	116	50.9	1.33	.664
Grand mean		1.65					

The results in Table 2 shows that e-books ($\bar{x}=1.80$), online databases ($\bar{x}=1.78$), e-journals ($\bar{x}=1.76$), and e-reference ($\bar{x}=1.76$) were adequate while CD-ROMs ($\bar{x}=1.33$) were not adequate

for use. This result follows the same pattern with the availability of e-resources, especially CD-ROMs. This finding is consistent with the study by Nnadozie, Aniebo and Chukwueke (2017).

Table 3: Accessibility of E-resources in the Library

S/N	E-Resources	Accessible		Not Accessible		Mean (\bar{x})	Std. Dev.
		Freq.	(%)	Freq.	(%)		
1.	Library OPAC	100	54.1	85	45.9	1.54	.500
2.	E-reference	100	52.6	90	47.4	1.53	.501
3.	Bulletin Board	100	49.3	103	50.7	1.49	.501
4.	Archives	84	44.2	106	55.8	1.44	.498
5.	E-journal	91	39.9	137	60.1	1.40	.491
6.	Online database	74	38.7	117	61.3	1.39	.488
7.	E-book	77	30.1	179	69.9	1.21	.585
8.	CD-ROMs	85	33.2	171	66.8	1.21	.645
Grand mean		1.40					

The result in Table 3 revealed how accessible the e-resources in the libraries are. Library OPAC (\bar{x} =1.54) and e-reference (\bar{x} =1.53) were reported to be accessible. The other resources such as CD-ROMs (\bar{x} =1.21), E-books (\bar{x} =1.21), Online databases (\bar{x} =1.39) were not accessible.

This is in agreement with Ojo and Akande (2005), Fyneman, Idiedo, & Ebhomeja (2014), and Nnadozie, Aniebo and Chukwueke (2017). However, e-books, CD-ROMS, Online databases and e-journals were not too accessible.

Table 4: Impact of E-resources on Open and Distance Learning (ODL) (N=256)

S/N	Impact	Strongly agree (%)	Agree (%)	Disagree (%)	Strongly disagree	Mean (\bar{x})	Std. Dev.
1.	Improved access to up-to-date data/information	113 (53.6)	86 (40.8)	11 (5.2)	1 (0.5)	3.47	.620
2.	Availability of literature	105 (50.3)	69 (33.0)	25 (12.0)	10 (4.8)	3.47	2.811
3.	Improved learning outcomes	160 (68.7)	41 (17.6)	7 (3.0)	25 (10.7)	3.44	.977
4.	Improved quality of research projects	123 (57.7)	62 (29.1)	9 (4.2)	19 (8.9)	3.36	.924
5.	Improved writing	84 (40.0)	64 (30.5)	37 (17.6)	23 (11.9)	2.99	1.028

skills

Grand mean 3.41

Table 4 shows the result of the impact of e-resources on ODL programme. Provision of e-resources has had impact on ODL in the following areas: improved access to up-to-date data/information, availability of related literature (Mean=3.47) each; improved learning outcomes (Mean=3.44), while improved writing skills had the lowest mean of 2.99. This implies that e-resources provision in ODL programme is of great impact on the programme. Findings on impact of e-resources revealed improved learning outcomes; this supports findings of Bhati and Ganai (2017), improved access to up-to-date information and quality of research projects. This corresponds with Quadri, Adetimirin, and Idowu (2014) that found improved class activities and collaboration as impact of e-resources use by students. Availability of relevant literature was another impact of e-resources to ODL as revealed by the findings of this study. This is consistent with Edem and Egbe (2016).

Table 5: Challenges of E-resources Utilization (N=256)

S/N	Challenges	Strongly agree (%)	Agree (%)	Disagree (%)	Strongly disagree	Mean (\bar{x})	Std. Dev.
1.	Financial constraints	61 (30.8)	58 (29.3)	35 (17.7)	44 (22.2)	3.35	1.156
2.	Poor Internet connection	54 (26.5)	74 (36.3)	49 (24.0)	27 (13.2)	2.76	.991
3.	Incessant power supply	91 (39.7)	50 (21.8)	26 (11.4)	62 (27.1)	2.74	1.239
4.	Low bandwidth	58 (29.1)	50 (25.1)	50 (25.1)	41 (20.6)	2.63	1.111
5.	Lack of skills	57 (27.8)	49 (23.9)	52 (25.4)	47 (22.9)	2.57	1.125
6.	Lack of technical know-how	43 (22.1)	55 (28.2)	44 (22.6)	53(27.2)	2.45	1.113
Grand mean		2.75					

The result of the challenges confronting students in undergoing ODL programme is presented in Table 5. The greatest challenge is financial constraints (Mean = 3.35), followed by poor Internet

connection (Mean =2.76), incessant power supply (mean = 2.74) while the least is lack of technical know-how (Mean= 2.45). This implies that there is no adequate budget for the provision of e-resources and facilities in the library which could also translate to poor internet connection. It is obvious that lack of technical know-how seem not to be a challenge to the students. This agrees with the study by (Ugwu & Orsu, 2017 and Okogwu & Ekere, 2019). Poor internet connection and low bandwidth pose a challenge to accessing e-resources. This supports the findings of (Fyneman, Idiedo, & Ebhomeja, 2014; Bassey & Odu, 2015; Nnadozie, Aniebo & Chukwueke, 2017 and Tella, Orim, Ibrahim & Memudu, 2018). Findings also revealed incessant power supply. This is a barrier to the use of e-resources as electrical power is needed to use the facilities and access the resources. This corresponds with the study by (Ugwu & Orsu, 2017; Umukoro & Tiamiyu, 2017 and Ternenge & Kashimana, 2019).

Table 6: Sustainability of Open and Distance Learning (N=256)

S/N	Factors	Strongly agree	Agree	Disagree	Strongly disagree	Mean	Std. Dev.
1.	Infrastructural development	103 (40.2)	79 (30.9)	12 (4.7)	10 (3.9)	3.35	.801
2.	Policy making and implementation	96 (37.8)	94 (36.7)	14 (5.5)	6 (2.3)	3.33	.728
3.	Maintenance culture	115 (44.9)	57 (22.3)	22 (8.6)	12 (4.7)	3.33	.889
4.	Adequate budget	94 (36.7)	75 (29.3)	24 (9.4)	5 (2.0)	3.30	.780
5.	Regular training	97 (37.9)	69 (27.0)	23 (9.0)	11(4.3)	3.26	.870
6.	Human resources development	86 (33.6)	87 (34.0)	16 (6.3)	13 (5.1)	3.22	.848
7.	International agencies	102 (39.8)	65 (25.4)	20 (7.8)	43 (16.8)	2.96	1.133
Grand mean =3.25							

Table 6 reveals the result of respondents' perception on sustaining the provision of e-resources for ODL in Nigeria. Infrastructural development, policy making and implementation,

maintenance, adequate budget, regular training and human resources development constitute the factors to be considered in the sustainability of e-resources provision for ODL. The implication of this is that universities should continue to develop infrastructure and this calls for adequate budget and implementation of policies coupled with regular training for maximum utilization.

Without adequate budget of strong financial support, there cannot be good infrastructural development. The findings corroborate past studies by Aderinoye & Ojokheta (2004), Adedokun & Babalola (2018) and Ojukwu & Mutula (2021).

Conclusion and Recommendation

Electronic information resources provision is paramount to Open and distance education and learning in this digital age. This study has established that electronic resources are made available in the University libraries offering distance learning programmes. Access to e-resources is becoming easier and robust with the advent of digital technologies that enhance mobile learning. The use of e-resources is having great impacts on learning, making education more flexible and collaboration more effective. This has also made globalization of education feasible. However, adequate budget and strong financial support cannot be over-emphasized in sustaining electronic information resources provision for Open and distance learning programmes. This study has some implications. Firstly, it calls for library advocacy in order to keep abreast of the new technologies in library services delivery. This calls for Library management and librarians should developing strong ability to press for more fund and promote library products and services. Secondly, all people, irrespective of status can achieve learning; consequently, stakeholders in higher education should uphold this form of education in ensuring a more literate society.

Based on the findings of this study, the following recommendations are made:

1. Federal government should increase budget for higher education institutions in order to allow the institutions provide necessary infrastructure and facilities required for teaching, learning and research.
2. Universities should increase library budget in order to develop ICT infrastructure to enhance access and use of e-resources.
3. University library management should have a functional ICT policy and solicit for fund from international agencies in order to create enabling environment for learning.
4. University library management should form a consortium that will make the availability and access to online databases cost effective.

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Appendix A

List of Participating Institutions and Return Rate of Questionnaire

S/N	Institution	No. Distributed	No. Returned	% Returned
1	University of Maiduguri	50	30	11.7
2	Ladoke Akintola University of Technology, Ogbomoso	50	38	14.8
3	Lagos State University, Ojo, Lagos	50	27	10.5
4	Ahmadu Bello University, Zaria	50	29	11.3
5	University of ABUJA	50	32	12.5
6	University of Lagos, Akoka, Lagos	50	50	19.5
7	University of Port Harcourt	50	28	10.9
8	Joseph Ayo Babalola University, Ikeji Arakeji	50	22	10.5
	Total	400	256	100.0