

INSTITUTIONAL FACTORS AND USE OF OPEN EDUCATIONAL RESOURCES IN NIGERIAN UNIVERSITY LIBRARIES

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Abstract

This study investigated institutional factors and the use of open educational resources in selected university libraries in South-West, Nigeria. A descriptive survey was adopted for this study and a questionnaire was the instrument used in gathering the data. Total enumeration technique was used to capture all 247 librarians in the selected university libraries in South-West Nigeria. 247 copies of questionnaires were distributed and 201(81.4%) retrieved and analysed using frequency count, percentages, mean, standard deviation and Pearson Product Moment Correlation. The study revealed that level of availability of ICT training for the use of OER is low, while the level of availability of infrastructure for the use of OER is moderately poor. Major challenges hindering the use of OER by librarians were inadequate funding, copyright issues, inadequate understanding of intellectual property rights licences in respect of OER and inadequate ICT skill. The study concluded that institutional factors have significant relationship with the use of OER by librarians in Nigerian libraries. The study therefore recommended adequate infrastructure and policies for adoption and use of OER in Nigerian university libraries

Keywords: OER Use, Institutional Factors, University Libraries, Librarians' Use of OER, Nigeria

Introduction

The growing capabilities of the Internet, coupled with OER, offer unprecedented opportunities for significantly broadening access to quality educational resources for different sectors. Open educational resources (OER) have recently emerged as an answer to the need for open and reusable educational material, freely available online. (Alekhya Karadia & Arabinda Kumar Seth, 2015). OER provides teaching and learning materials freely on the web. OER is an online platform that enables free access to

educational materials with an open license (UNESCO, 2016). Mwinyimbegu (2018) explained succinctly that OER allowed poor students free access to education and learning resources. As open resources become more prominent, academic libraries need to take account of them, integrating the institutionally produced content in their digital collections, and selecting those external OER that could be of the interest of the community. This notion was supported by ACRL (2009) as it affirmed that OERs should become additional resources referenced by subject librarians in supporting students and lecturers.

University librarians are tasked with curating and making the full range of materials accessible to support student learning and faculty research. Librarians serve to educate as many people as possible in as many ways and in as many domains as possible. Development of OER is one of the platforms librarians could make their impact felt when it comes to promoting accessibility, dissemination and usability of digital resources in OER. The significance roles of libraries via librarians in the deployment and use of OER cannot be overemphasised. Librarians are at the forefront of assessing OER as a resource to enhance teaching, learning and research. (Davis, Fagerheim, Thoms & Cochran, 2016). Importance of librarians in facilitating the adoption and use of OER is well known and this was attested to by the international Journal of Open Education Resources (2020) as it's recently published a special issue entitled Librarians as fundamental, Transformational and Visionary Leaders in the OER Movement. Librarians have been at the forefront of assessing and promoting OER as a resource for enhancing teaching, learning and research, especially in university libraries in developed countries. This assertion was corroborated by Davis, Fagerheim, Thoms and Cochran (2016); Katz (2018); Leslie (2010) reflects about the role of a "OER Virtual Librarian"; and, especially the series of articles about OER and Libraries posted by Robertson (2010a; 2010c; 2010d; 2011) at his JISC-CETIS blog. Substantial growth in library-led OER initiatives at institutions across the United States such as at the University of Massachusetts at Amherst Libraries and North Carolina State University Libraries is further evidence that academic libraries are leading the way in the OER movement on their campuses (Bell, 2015). The situation of use of OER by librarians in university libraries in less developed countries like Nigeria is still low owing to many reasons which might include inadequate institutional factors in the university libraries.

Institutional factors in the context of use of OER are factors that could affect the use of OER. They are described as any institutional - based infrastructure that will enhance or facilitate the use of OER in the university libraries surveyed. They are basic infrastructure that are needed for the smooth use of the OER and because of their importance and resources needed to put them in place; they are to be provided by the parent institutions the libraries are serving. These factors are numerous, they include but not limited to adequate power supply, physical infrastructure, computer systems and peripheral parts, adequate trained personnel and OER policies just to mention a few. The necessary infrastructure for the use of OER when provided might affect the level of use of this platform by librarians. This assertion was confirmed by Gambo and Aliyu (2017) as they reported that delayed internet connectivity, power outage are part of the challenges faced when using OER. Ajibade (2018) similarly submitted that

epileptic power supply, slow internet services, inability of library staff to give needed assistance, search and the shortage of computer systems encountered were some of the challenges facing the usage of OER users.

ICT training is another institutional factor that might affect librarians' use of OER. ICT training tends to influence the use of OER. It is believed that the level of ICT competence of librarians could influence OER use. The lack of ICT competence could resolve the unwillingness of librarians to use OER. Ojedokun and Ayoka (2015) stated that the challenges facing library services in university libraries in Nigeria are the librarians' unwillingness to incorporate ICT in terms of knowledge and skills to implement the modern library services. Ojiegbe (2010) opined that many library staff in academic institutions do not possess ICT skills. Nkamnebe, Okeke, Udem, and Nkamnebe (2015) found out that librarians understudy were faintly skilled in terms of Information and Communication Technologies. Okon and Ogbodo (2014) stated that the low adoption of ICTs in Nigeria University Libraries is as results of low ICT skills possessed by librarians in Nigerian universities, hence the availability of ICT training provided for librarians could influence the use of OER in service delivery. OER deployment in Nigerian university libraries without the needed infrastructures and the right hand (ICT skills) for its use by librarians might just be a waste.

Statement of the Problem

The introduction of ICT into the information handling task of the library system has changed the form in which services are rendered to clientele. ICT brought a host of innovations into the library system in which OER is one of them. The use of OER gave room for efficient and tremendous access to diverse licensed information resources free or at a low price in whatever format, thus improving the standard and quality of education. Studies (Bell 2015; Smith & Lee 2017) have shown that OER is being used by librarians in university libraries in developed countries for service delivery, while reverse is the case in the developing countries like Nigeria. This situation is undesirable as students, lecturers, researchers and self-learners in Nigeria haven't optimally put into effective and efficient use of the OER provided with its prevent benefits derivable from the adoption and use of OER in the libraries being investigated. This abysmal low use of OER could be due to institutional factors(infrastructure and ICT training) in Nigerian university libraries, hence it is imperative to investigate the relationship between the use OER of by librarians and institutional factors (infrastructures and ICT training) in the selected university libraries in South-West Nigeria.

Research Questions

1. What is the level of infrastructure for the use of OER by librarians in selected Nigerian university libraries?
2. What is the level of ICT training available for the use of OER by librarians in selected Nigerian university libraries?

3. What are the challenges faced by librarians in using OER in the selected university libraries in Nigeria?

Research Hypothesis

H₀₁: There is no significant relationship between institutional factors (infrastructure, ICT training)

Concept and importance of Online Educational Resources

Open Educational Resources (OER) are open licensed educational resources freely available online under an intellectual property license that permits their free use and re-posting opportunities for people everywhere to share, use and reuse quality materials and tools (Jung, Bauer & Heaps., 2017). UNESCO (2012) defined OER as “teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. OER resources range from textbooks to curricula, syllabi, lecture notes, assignments, tests, projects, audio, video and animation. The Nigeria’s National Policy on Open Educational Resources for Higher Education (NPOERHE) section 1.3 (NUC 2017) describes OER as all educational materials that have been designed for use in teaching and learning and are openly available for use by educators and students, without the need to pay royalties or license fees. OER are digital educational materials that are openly and freely available to the educational communities i.e. lecturers and students for use and reuse in teaching and research (Armakolas, Robolas, Karachaties, Karachasani, Anastopoulous & Gomatos, 2018; Armakolas, Panagiotakopoulos, Karatrantous & Viris, 2018; Ishinger, 2017).

OER can savage the rising cost of books in many institutions, thus supporting teaching, learning and research activities of an institution. Colson, Scott and Donaldson (2017) concurred with the above statement by stating that, one of the solutions to reduce the high and rising costs of textbooks and instructional materials is to replace them with OER which are free and make education more affordable to students. Smith and Casserly (2006) stated that the open education is based on the view that knowledge is a public good and the internet is an effective and efficient way to share knowledge. This connotes that knowledge needs to be shared without any form of restriction to the members of a community. In sharing of this knowledge to the public, internet plays a significant role in the dissemination of this knowledge across board. Muganda et al. (2016) added that knowledge and strategies to promote effective development, use, integration, hosting and dissemination of OER within the context is an important undertaking. Similarly, Mushi and Muganda's (2013) study showed that OER have great potential to national development but need proper planning, financial, infrastructural support and capacity building to overcome incumbent challenges.

Librarians and Use of Open Educational Resources (OER) in the University Libraries

Many higher institutions of learning are taking the advantages of the use of OER. Hylen (2008) reported that above 150 universities in China take part in China Open Resources for Education initiative equally 11 top universities in France have formed the Paris Tech Open Courseware (OCW) project for enhancing teaching and learning in educational institutions. Davis, Fagerheim, Thoms and Cochran, (2016) stated that OER adoption and use in Utah State University is a product of collaboration between the library and Utah State University's Center for Innovation Design & Instruction (CIDI). Librarians are natural partners in OER initiatives and advocates for more affordable learning resources due to their philosophical support for information access, existing relationships with both faculty and students, and outreach and instructional support experience (Okamoto 2013; Mitchell & Chu, 2014). Martin (2010) observed that librarians are good partners in fostering the use of OER as they advocate for affordable learning resources and information accessibility, foster relationships between students and faculty, and provide outreach and instructional support services to aid the use of OER. Martin further affirmed that librarians can also provide free access to customers via digital repositories.

Libraries need to remedy the high cost of textbooks, they have to be actively involved in the adoption and use of OER owing to the fact that libraries are responsible for the provision of free or low-cost access to information to patrons, hence the need for libraries to seize the opportunities provided by OER. Bell (2015) equally noted that libraries can find high-quality open course materials along with library licensed content for both students and faculty members (lecturers). Nwaohiri (2021) carried out a study on open educational resources (OER) in Nigerian universities: promotion and awareness opportunities for academic libraries for a path to higher education success and opined that librarians should play an advisory role to their respective faculties by integration of OER in their courses. Sutton and Chadwell (2014) opined that Oregon State University (OSU) had engaged in the open textbook project which successful outcome was recorded as a result of collaboration between the university and the faculty members. Also, campuses in US had also adopted the initiative of OER such as OpenStax, alternate textbook programmes (Bell, 2015). Pitcher (2014) stated that diverse universities like the State University of New York are using textbook publishing initiatives in their universities.

Woodward (2017) argued that in order to promote the usage of OER, libraries and librarians are positioned to champion the OER adoption movement given their pervasive scope and specialised skills. Librarians' knowledge of free online publishing, copyright issues and fair use, can also add to the discussion about open educational resources. Brenda Smith and Leva (2016) are of the view that academic librarians are obviously suited to help explore the OER world and to tackle few of these difficulties by directing, supporting, and cooperating in OER initiatives with OER users and writers. Highlighting the importance of Librarians' role in OER, Bruce (2016) stated

that Librarians are in an exclusive role to offer help to teachers trying to fuse OER into their lessons. According to Davis, Cochran, Fagerheim, and Thoms (2016) librarians with a background of assembling top quality learning materials for both teaching and research, are well placed to work with teachers trying to fuse OER into their instructions.

According to another study conducted in India by Upadhyay and Upadhyay (2015) Libraries are proposed to collect digital educational resources, consisting of both institutionally housed and remotely accessed resources. In this way, OER take up a significant and vital position. The study conducted by Bueno-de-la-Fuente, Robertson and Boon (2012) indicates that the support of the library is still not broad, and a significant lack of awareness prevails with regards to library activities about the resources released by OER initiatives.

The investigative study by Robertson (2010) revealed that librarians can offer guidance to organisations, scholastic staff and researchers since they are occupied in OER through metadata management, resource description, information management, knowledge dissemination, information and digital literacy, subject guides for finding resources, administering intellectual property rights and promoting suitable open licensing. In a study carried by Upneja (2020) on contribution of library professionals and libraries in Open Educational Resources in Indian Scenario revealed that role being librarian in the use of OER including promotion 116 (15.63 %), identification 104 (14.02 %), guiding users 98 (13.21 %), collection 96 12.96 %), management 93 (12.53 %), dissemination 82 (11.05 %), evaluation 57 (7.68 %), Production 53 (7.14 %) and integration 43 (5.80 %). Upneja concluded that librarians are significant in promoting open resources, guiding patrons in describing, discovering, managing and using OER. The findings also reveal that the Librarians prefer to identify and promote the use of OER rather than involving themselves in production and integration.

Institutional Factors and Use of OER

Institutional support is considered to be a key factor in the use of OER. Adala (2017) carried out a study on assessing the impact of OER availability on the emergence of open educational practices in Sub-Saharan Africa: the case of an ICT-integrated multinational teacher education in mathematics and science and found out that ICT infrastructure and tools is one of the numerous factors that enabled or could hinder the use of OER. Institutional support may be one of the most important factors influencing OER adoption; Hassall and Lewis (2017) noted 40% of faculty respondents had little or no institutional support with discussion linking those findings to robust topic activity at the related institutions.

Extant literature highlighted computing and communication infrastructure as a challenge to OER adoption, especially in SSA (Ehlers, 2011; Hodgkinson, Williams, 2010; Wright & Reju, 2012). Participants' experiences with ICT infrastructure varied from: the few who saw it as excellent; some who saw it as fair; and the majority who saw it as a stumbling block in the path to OER adoption. The ICT infrastructure

considered essential for accessing digital OER included personal and institutional equipment and accessories, reliable Internet, and accessible computer laboratories. Similarly, Uhegbu (2008) is worried that one of the constraints of universities in Nigeria to be globally interlinked has remained poor bandwidth which limits their access and use of global online information resources, including OER. Hart, Chetty, and Archer's (2015) findings indicating high levels of OER knowledge, but low levels of participation, institutional support may be a strong indicator of direct action. Changes to bookstore funding and structure (de Langen, 2011) may also be significant factors in future institutional support of OER; institutions will need to manage varied pressures with loss of bookstore revenue versus supporting financially stressed students, and use of OER as a marketing tool for enrolment.

With recognition that the development of OER infrastructure is a significant undertaking, it is reasonable to address how sustainability practices can influence implementation and long-term support. While Hoover and Harder (2015) make the compelling argument that higher education organisational structures are new to sustainability constructs and hence have underdeveloped change structures. May (2014) argues that readiness of supporting institutions to accept and collaborate on open repository is necessary for use of OER in their universities. Institutional factors are still inadequate in Nigeria to aid deployment and use of OER. It is the recognition of this that made Aken, Nsirim and Nsirim (2019) to affirm that university libraries in Nigeria must develop both human capital and infrastructure and the willingness to join the global trend in the use of OER which is currently poor among the universities in Nigeria University libraries.

Abdulganiy (2000) pointed out that information and communication technologies cannot be fully exploited if library staff lacked basic ICT skills. In order to retain their relevance in the present digital society, libraries and librarians in Nigeria must embrace ICTs and acquire new skills that will enable them to offer services that will attract the patronage of their users within and outside the library setting (Okon & Ogbodo, 2014).

Librarians and Challenges of Use of OER

In the creation, organisation and promotion of OER, libraries and librarians are labeled as important players in the process of development, selection, integration and promotion of OER. Librarians are faced with numerous challenges while using OER which include limited connectivity, low levels of digital literacy and geographical remoteness (Walji, 2014). Mtebe and Raisamo (2014) investigated perceived barriers to the use of OER in higher education in Tanzania. They found that lack of access to computers and the internet, low internet bandwidth, absence of policies, and lack of skills to create and/or use OER are the main barriers to effective usage of OER in higher education institutions in Tanzania. Smith and Lee (2017) observed that, academic librarians also face the challenge of fast changing technology that requires librarians to consistently upgrade their skills to effectively manage change in order to cope with the changing needs of users and at the same time manage multiple and simultaneous responsibilities. Indeed, to keep pace with the changing innovations in

the information environment and age, academic librarians need relevant upgraded skills and competencies.

Mwamlangala (2015) reported on the challenges to effective adaptation and use of OER and it includes inadequate ICT infrastructure, low level of awareness on intellectual property rights and copyright issues, lack of OER policies, curriculum incompatibility, inadequate bandwidth and lack of investment resources in OER. Muganda et al. (2016) study on analytical insights on the position, challenges, and potential of promoting OER in Open and distance learning institutions in Africa revealed that staffs are willing to engage in OER but have limited awareness, skills and competencies in the creation, integration and use of OER. Other roadblocks include worries about the required time investment, skepticism about resource and material quality on the part of faculty and concerns about scalability on the part of librarians (Okamoto, 2013). Mtebe (2014) and Raisamo (2014) found that instructors' intentions to use OER were significantly affected by their effort and expectancy. Inadequate ICT infrastructure, lack of awareness about copyright issues related to OER implementation, the irrelevance of OER in curricula, and lack of awareness about OER exist as factors that limit the use of OER. There is increase in the spread of the adoption and use of OER across the globe. Ipaye and Ipaye (2012) showed a low percentage of awareness of OER equally the studies of Okonkwo and Reed (2012) showed a high percentage of awareness.

Methodology

Descriptive survey research was used for this study because this study sought to obtain data on institutional factors (ICT training and Infrastructure) and the use of OER in selected university libraries in South-West Nigeria. The design was suitable for the study because librarians' opinion would be the source of data collection. The total population of the study comprised 247 Librarians in eighteen (18) selected Federal, State and Private University Libraries in South-West Nigeria this is so because there are some States with more than one state and private universities. The first established federal, state and private universities in each state of the South-West Nigeria were selected. The total number of Librarians' in these universities is 247. Table 1 below shows the numbers of librarians in each university library surveyed.

Table: 1 Number of librarians in selected University Libraries in South-West Nigeria

State	University Libraries	Year Established	Ownership	No. of Librarians
Ondo	1. Federal University of Technology Library, Akure	1981	Federal	17
	2. Adekunle Ajasin University Library Akungba	1999	Ondo State	4
	3. Achievers' University Library, Owo	2007	Private	3
Osun	4. Obafemi Awolowo University Library, Ife	1962	Federal	26
	5. Osun State University Library, Osogbo	2006	Osun State	10
	6. BOWEN University Library, Iwo	2001	Private	7
Lagos	7. University of Lagos Library, Lagos	1962	Federal	19
	8. Lagos State University Library, Ojo	1983	Lagos State	15
	9. Pan Atlantic University Library, Lagos	2002	Private	4
Ogun	10. Federal University of Agriculture Library, Abeokuta	1988	Federal	22
	11. Olabisi Onabanjo University Library, Ago-Iwoye	1982	Ogun State	14
	12. Babcock University Library, Ilisan-Remo	1999	Private	23
Oyo	13. University of Ibadan Library, Ibadan	1948	Federal	29
	14. Lead City University Library, Ibadan	2005	Private	13
	15. Ladoke Akintola University Library, Ogbomoso	1990	Oyo State	14
	16. Federal University	2011	Federal	6

Ekiti	Library, Oye Ekiti			
	17. Ekiti State University Library, Ado-Ekiti	1982	Ekiti State	13
	18. Afe Babalola University Library, Ado-Ekiti	2011	Private	8
		247		

Sources: National Universities Commission’s Site and Corresponding Library Administrative Units.

Results

Research Question 1: What is the level of availability of infrastructure for the use of OER by Librarians in selected university libraries in South-West Nigeria?

Table 2 Level of Availability of Infrastructure for the Use of OER in the selected university libraries

Available Infrastructure	RA	A	NRA	NA	NAAA	Mean	Std. D
INFRASTRUCTURE							
Computer systems	138(68.7%)	61(30.3%)	-	-	2(1%)	3.66	0.58
24 hours Internet connectivity	63(31.3%)	79(39.3%)	40(19.9%)	17(8.5%)	2(1%)	2.92	0.96
Stable Electricity supply	56(27.9%)	79(39.3%)	40(19.9%)	25(12.4%)	1(0.5%)	2.82	0.99
Strong Bandwidth	43(21.4%)	102(50.7%)	40(19.9%)	14(7%)	2(1%)	2.85	0.87
Scanners	82(40.8%)	77(38.3%)	38(18.9%)	2(1%)	2(1%)	3.17	0.83
Projectors	47(23.4%)	89(44.3%)	49(24.4%)	16(8%)	-	2.83	0.87
Printers	81(40.3%)	97(48.3%)	20(10%)	1(0.5%)	2(1%)	3.26	0.73
Photocopy machine	81(40.3%)	99(49.3%)	15(7.5%)	2(1%)	4(2%)	3.25	0.79
Server	83(41.3%)	71(35.3%)	34(16.9%)	11(5.5%)	2(1%)	3.10	0.94
Barcode scanner	63(31.3%)	67(33.3%)	48(23.9%)	7(3.5%)	16(8%)	2.77	1.16
Databank	48(23.9%)	88(43.8%)	32(15.9%)	28(13.9%)	5(2.5%)	2.73	1.05
3.01							

N=201, Key: RA=Readily Available, A=Available, NRA=Not Readily Available, NA=Not Available, NAAA=Not Available At All
 Decision rule: if mean ≤ 2.99 = low, 3.0-3.99= average/moderate, 4.0-4.49 = high, 4.50-5.00= very high

Table 2 showed the available infrastructure for the use of OER in the selected university libraries in South-West Nigeria. The grand mean ($\bar{X}=3.01$) revealed that the level of availability of infrastructure of the use of OER are on the average. The result revealed that computers with $\bar{X}=3.66$, SD=0.58; printers with $\bar{X}=3.26$, SD=0.73; photocopy machine with $\bar{X}=3.25$, SD=0.79; scanners with $\bar{X}=3.17$, SD=0.83 and servers with $\bar{X}=3.10$, SD=0.94 were moderately available in the selected university

libraries under study. While 24hours internet connectivity with $\bar{X}=2.92$, $SD=0.96$, strong bandwidth with $\bar{X}=2.85$, $SD=0.87$; projectors with $\bar{X}=2.83$, $SD=0.87$; stable electricity supply with $\bar{X}=2.82$, $SD=0.99$; barcode scanner with $\bar{X}=2.77$, $SD=1.16$ and databank with $\bar{X}=2.73$, $SD=1.05$ were either not available or were not available in the selected university libraries in South-West Nigeria. The finding indicates that the availability of infrastructure for the use of OER in the selected university libraries in South-West, Nigeria is moderate.

Research Question 2: What is the level of availability ICT trainings for librarians in using of OER in selected university libraries in South-West Nigeria?

Table 3: Level of Availability ICT Training for Use of OER in the selected university libraries

Available ICT Training	RA	A	NRA	NA	NAAA	Mean	Std. D
ICT TRAINING							
Computer Appreciation (desktop publishing, spreadsheet, PPP etc.)	69(34.3%)	90(44.8%)	29(14.4%)	9(4.5)	4(2%)	3.05	0.92
Web designing	6(3%)	24(11.9%)	59(29.4%)	65(32.3%)	47(23.4%)	2.61	0.06
Digitization	58(28.9%)	76(37.8%)	44(21.9%)	16(8%)	7(3.5%)	2.81	0.05
Programming	9(4.5%)	24(11.9)	37(18.4%)	70(34.8%)	61(30.3%)	2.46	0.06
Computer installation and configuration	50(24.9%)	68(33.8%)	60(29.9%)	15(7.5%)	8(4%)	2.68	0.05
Networking	43(21.4%)	80(39.8%)	47(23.4%)	24(11.9%)	7(3.5%)	2.62	0.05
Troubleshooting	41(20.4%)	92(45.8%)	51(25.4%)	11(5.5%)	6(3%)	2.75	0.94
Database Management System	55(27.4%)	82(40.5%)	45(22.4%)	15(7.5%)	4(2%)	2.84	0.97
3							

N: 201, Key: RA=Readily Available, A=Available, NRA=Not Readily Available, NA=Not Available, NAAA=Not Available At All

Decision rule: if mean ≤ 2.99 = low, 3.0-3.99= average/moderate, 4.0-4.49 = high, 4.50-5.00= very high

Table 3 revealed the level of availability of ICT training for librarians in using OER in the selected university libraries in South-West Nigeria. The grand mean ($\bar{X}=3$) revealed that the level of availability of ICT training of the use of OER is moderate. The result revealed that librarians under study were moderately provided with the training of computer appreciation (desktop publishing) training with $\bar{X}=3.05$, $SD=0.92$; while database management system training programme with $\bar{X}=2.84$, $SD=0.97$ digitization training with $\bar{X}=2.81$, $SD=0.05$ and troubleshooting training with $\bar{X}=2.75$,

SD=0.94; computer installation and configuration training with \bar{X} =2.68, SD=0.05; networking training with \bar{X} =2.62, SD=0.05; web designing training with \bar{X} =2.61, SD=0.06 and programming training with \bar{X} =2.46, SD=0.06 were rarely available to librarians to in the selected university libraries in South-West Nigeria. This depicts that librarians in the selected university libraries are not provided with the adequate and necessary ICT training needed for the use of OER. Judging from the grand mean (3) the available ICT training for librarian under study is moderate.

Research Question 3: What are the challenges encountered in the use of Open Educational Resources (OER) in your library?

Table 4: Challenges of Using OER in the selected university libraries

Challenges of Using OER	S/A	A	D	S/D	Mean	Std. D
Insufficient financial support at the management level for the creation and maintenance of OER	70(34.8%)	104(51.7%)	24(11.9%)	3(1.5%)	2.20	0.70
Lack of understanding of intellectual property licenses, copyright and creative commons license	64(31.8%)	90(44.8%)	44(21.9%)	3(1.5%)	2.07	0.77
Copyright issues for the enhancement of adoption of OER	71(35.3%)	76(37.8%)	51(25.4%)	3(1.5%)	2.07	0.81
Inadequate skills for using web 2.0	64(31.8%)	84(41.8%)	43(21.4%)	10(5%)	2.00	0.86
Poor bandwidth	60(29.9%)	84(41.8%)	55(27.4%)	2(1%)	2.00	0.78
Difficult in creating OER using Creative Commons Licensed learning object	64(31.8%)	69(34.3%)	66(32.8%)	2(1%)	1.97	0.84
Inadequate IT infrastructure	63(31.3%)	70(34.8%)	66(32.8%)	2(1%)	1.97	0.83
Bugs and virus infecting system	53(26.4%)	88(43.8%)	49(24.4%)	11(5.5%)	1.91	0.85
Inadequate ICT skills required to create OER	55(27.4%)	65(32.3%)	77(38.3%)	4(2%)	1.85	0.85
Incompatibility between OER and the LMS (Library management software).	46(22.9%)	83(41.3%)	67(33.3%)	5(2.5%)	1.85	0.80
Difficulties with editing and localizing the created OER	42(20.9%)	90(44.8%)	55(27.4%)	14(7%)	1.80	0.85

Poor or unreliable power supply	52(25.9%)	61(30.3%)	83(41.3%)	5(2.5%)	1.80	0.86
Unwillingness of the lecturers to release their work for capturing in OER	51(25.4%)	59(29.4%)	81(40.3%)	10(5%)	1.75	0.89
1.95						

N=201, Key: SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree
 Decision rule: if mean is ≤ 2.49 =low, 2.5-2.99 = average, 3.0-3.49 = high, 3.5-4.0= very high

Table 4 revealed the challenges encountered by librarians in the selected university libraries in South-West Nigeria using OER in their libraries. The grand mean (1.95) revealed that librarians are faced with enormous challenges while using OER. The results of the study shows that librarians under study agreed that insufficient financial support at the management level for the creation and maintenance of OER with \bar{X} =2.20, SD=.70; copyright issues for the enhancement of adoption of OER with \bar{X} =2.07, SD=.81; lack of understanding of intellectual property license, copyright and creative commons license with \bar{X} = 2.07, SD=0.77, poor bandwidth with \bar{X} =2.00, SD=0.78 and inadequate skills for using web 2.0 with \bar{X} =2.00, SD=0.86; inadequate IT infrastructure with \bar{X} =1.97, SD=0.83; difficult in creating OER using Creative Commons Licensed learning object with \bar{X} =1.97, SD=0.84 and bugs and virus infecting system with \bar{X} =1.91, SD=0.85 were challenges facing librarians while using OER, while librarians disagreed that incompatibility between OER and the LMS (library management software) with \bar{X} =1.85, SD=0.80; inadequate ICT skills required to create OER with \bar{X} =1.85, SD=0.85; power or unreliable power supply with \bar{X} =1.80, SD=0.86; difficulties with editing and localizing the created OER with \bar{X} =1.80, SD=0.85 and unwillingness of the lecturers to release their work for capturing in OER with \bar{X} =1.75, SD=0.89 were not the main challenges encountered by librarian under study. The reports of the challenges were ranked according to the mean to show the intensity of the challenges.

H0: There is no significant relationship between institutional factors and the use of OER in selected university libraries.

Table 5: Relationship between institutional factors and use of OER by Librarians

Variables	\bar{X}	Std. Dev.	Institutional Factors	Use of OER
Pearson correlation Institutional Factors Sig (2 – tailed) N	36.74	7.74	1 201	.535** .000 201
Pearson correlation Use of OER Sig (2 – tailed) N	49.92	10.90	.535** 000 201	1 201

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis of institutional factors and use of OER is presented in Table 4.9. The analysis in Table 5 shows that the Pearson correlation coefficient was 0.535. This indicates that there is significant relationship between the use of OER by librarians and institutional factors in the selected university libraries in South -West Nigeria. (P-value = 0.00). This finding indicates that there is a positive linear relationship between the use of OER by librarians and institutional factors, therefore, the null hypothesis 1, which states that there is no significant relationship between the use of OER by Librarians and institutional factors in the selected institutional factors use of OER in selected university libraries in South-West, Nigeria is hereby rejected.

Discussion of Findings

The first research question was on the level of infrastructure for the use of OER by librarians in selected Nigerian university libraries; the findings showed that computers (\bar{x} =3.66), followed by scanners (\bar{x} =3.17), servers (\bar{x} =3.10), printers (\bar{x} =2.92), photocopy machines (\bar{x} =2.82), were available in the university libraries under study. The result of this study negated previous studies on the availability of ICT infrastructure which stated that, computing and communication infrastructure are scarcely available (Ehlers, 2011; Hodgkinson Williams, 2010; Wright & Reju, 2012).

The second research question was on the level of ICT training available for the use of OER by librarians in selected Nigerian libraries. Findings revealed a moderately high level of availability of ICT training for librarians under study with a grand mean score of (\bar{x} =3.0). The availability level of the ICT training to librarians is in varying degrees which include computer appreciation (desktop publishing, spread sheet, PPP etc.) (\bar{x} =3.05), followed by database management system (\bar{x} =2.84), digitization (\bar{x} =2.81) on the other hand, ICT training such as networking (\bar{x} =2.62), web designing (\bar{x} =2.61) and programming (\bar{x} =2.46) were partially available. This finding concurs with Martin, (2010; Mitchell and Chu, 2014; & Okamoto, 2013) who found out that for optimal usage of OER, training Librarians’ is essential. Also Gana, Whong, Eseg, Barrua, and Kasa (2015) supported the findings above by stating that academic Librarians acquired and utilized skills such as website maintenance, system application,

and networking but they lacked skills such as web 2.0 technologies and system software development.

A number of issues were identified as challenges to the use of OER by librarians. The respondents agreed that insufficient financial support at the management level for the creation and maintenance of OER, dearth of institutional policy on OER, copyright issues for the enhancement of adoption of OER, lack of understanding of intellectual property licenses, copyright and creative commons license, poor bandwidth and inadequate skills for using web 2.0 were the challenges encountered by librarians surveyed. This finding corroborates the finding of a study on OER by Walji (2014) that reported that the prominent challenges facing librarians in using OER includes, limited connectivity, low levels of digital literacy and geographical remoteness. Infrastructural problem in Nigeria is still prevalent in Nigeria and it affects every facet of the country. Without a strong bandwidth, it is hard to deliver web- based services. It is worrisome that bandwidth and other infrastructural issues are still a mirage in the Nigeria is still in this age. This finding is line with the findings of Mtebe and Raisamo (2014; Mwamlangala, 2015) who submitted that lack of access to computers and the internet, low internet bandwidth, absence of policies, and lack of skills to create and/or use OER are the main barriers to effective usage of OER.

The study hypothesized that there will be no significant relationship between institutional factors (infrastructure and ICT training) and the use of OER by librarians. The findings showed that a positive linear relationship exist between institutional factors (infrastructure and ICT training) ($\bar{x}=36.74$, $SD=7.74$) and the use of OER by librarians ($\bar{x}=49.92$ $SD=10.90$); $t(201, p=.535)$. Since P value is greater than .05 hence, the provision of adequate institutional factors (infrastructure and training) will have a positive significant effect on the use of OER by librarians in the selected university libraries in South-West Nigeria. This result aligned with the views of Aken, Nsirim and Nsirim (2019) who reported that the use of OER in Nigeria University libraries is subject to the availability of both human capital and infrastructure. Equally, Mushi and Muganda's (2013) stated that OER had a great potential in national building but need proper planning, financial, infrastructural support.

Conclusion

The importance of OER in delivering library services in Nigerian university libraries in the 21st century cannot be overemphasised. In realisation of its importance, libraries in the world, including university libraries have been using it to enhance their services significantly. The central position occupied by librarians in university libraries being line- staff that would be deploying and using the OER could not be underplayed if the libraries want to succeed in the use of OER. The findings of this study revealed that there were traces that OER has been deployed and used in Nigerian university libraries. Finding further showed that inadequacy in terms of infrastructural facilities and training required for the effective use of OER by the librarians for service delivery to users in the university communities surveyed. In addition, findings established that institutional factors (infrastructure and ICT training) have significant positive linear

relationship with the use of OER in the selected university libraries in South-West Nigeria. The study concluded that use of OER by librarians was significantly affected by the deployment of infrastructure and relevant ICT trainings. The provision of the infrastructure would improve the capacity of the librarians to use the available OER in the university libraries and this would have positive effects on OER related- services that would be rendered to students, faculty staff and researchers in Nigerian university libraries.

Recommendations

1. Adequate infrastructure such as 24hours internet connectivity, barcode readers, stable electricity supply, strong bandwidth should be provided in the libraries to enhance the use of OER by the librarians in the Nigerian university libraries.
2. Adequate ICT training needed for effective use of OER should be given to librarians in the universities on regular basis as OER is ICT- driven.
3. Adequate funds should be provided regularly by management of the universities in Nigeria to improve the use of OER by librarians to improve library services.
4. There is also the need for the management of the university to put in place adequate policies that will ensure proper deployment and use of OER in the Nigerian university libraries.

References

- Abdulganiy, A. O. (2002). Application of Information Technology in Libraries: a case study of selected colleges of Education libraries in Nigeria. *Middle- Belt Journal of Library and Information Science*, 2 (1 & 2) 16-24.
- Adala, A. (2017). assessing the impact of OER availability on the emergence of open educational practices in Sub-Saharan Africa: the case of an ICT-integrated multinational teacher education in mathematics and science. *Research on Open Educational Resources for Development*, retrieved on 15th Feb, 2020 at <https://creativecommons.org/licenses/by/4.0/legalcode>),
- Ajibade, P. (2018). Technology Acceptance Model Limitations and Criticisms: Exploring the Practical Applications and Use in Technology-related Studies, Mixed-method, and Qualitative Researches. *Library Philosophy and Practice* (e-journal). Retrieved on 20th January, 2020 from: <http://digitalcommons.unl.edu/libphilprac/1941>
- Aken, B. Nsirim, O. & Nsirim, P. (2019). A survey of electronic resources use in Rivers State University Library, Port Harcourt Nigeria. *Ebonyi Journal of Library and Information Science*, 6(1), 122-131.
- Armakolas, S., Magkaki, F., & Panagiotakopoulos, C. (2017). Open Educational Resources and quality indicators for the design, development and operation of repositories. In *Proceedings of the 9th International Conference in Open & Distance Learning* (pp. 85-96). Athens: EΔAE. [in Greek].

- Armakolas, S., Panagiotakopoulos, C., Karatrantou, A., & Viris, D. (2018). Integrating free and Open-Source Software in the classroom: IMprinting trainee teachers' attitudes. In A. Mikropoulos (Ed.), *Research on e-Learning and ICT in Education* (pp. 123-134). Switzerland: *Springer International Publishing*.
- Bell, S. (2015). Start a textbook revolution, continued: Librarians' lead the way with open educational resources. *Library Issues* 35 (5), pp. 1-4. Retrieved January 8, 2020 from <http://www.libraryissues.com/pub/PDF3505May2015.pdf>
- Brenda, Smith & Leva, Lee. (2016). Librarians and OER: Cultivating a community of practice to be more effective advocates. *J. Libr. Inf. Serv. Distance Learn.* 11(1-2), 106-122. doi: 10.1080/1533290X.2016.1226592.
- Browne, T., Holding, R., Howell, A., & Rodway-Dyer, S. (2010). The challenges of OER to academic practice. *Journal of Interactive Media in Education*. Retrieved on 10th February, 2020 from: <http://jime.ubiquitypress.com/articles/10.5334/2010-3/print/>
- Bueno-de-la-Fuente. G., Robertson, R. J. & Boon, S. (2012). The roles of libraries and information professionals in Open Educational Resources (OER) initiatives. <https://minds.wisconsin.edu/bitstream/handle/1793/63306/OER-LibrariesSurveyReport.pdf?sequence=1&isAllowed=y>. Accessed on 04 November 2019
- de Langen, F. (2011). There is no business model for open educational resources: A business model approach. *Open Learning: The Journal of Open, Distance, and e-Learning*, 26, 209–222. doi:10.1080/02680513.2011.611683
- de-Hart, K. L., Chetty, Y. B. & Archer, E. (2015). Uptake of OER by staff in distance education in South Africa. *International Review of Research in Open and Distance Learning*, 16(2), 18-45. <https://doi.org/10.19173/irrodl.v16i2.2047>
- Gambo, R. D. & Aliyu, S. M. (2017). Use of Open Educational Resources and Print Educational Materials by Federal College of Education Katsina, Nigeria: *A Study*. *Journal of Library & Information Technology*, 37(6) December 2019, pp. 437-442, DOI : 10.14429/djlit.37.10628
- Gana, E.; Whong, F. M.; Esew, M.; Barua, M. & Kasa, M. G. (2015). Assessing Information And Technology Skills for Effective Service Delivery of Academic Librarians' in North-West, Nigeria. *Information Trends*. 13:65-72
- Hassall, C., & Lewis, D. I. (2017). Institutional and technological barriers to the use of Open Educational Resources (OERs) in physiology and medical education. *Advances in Physiology Education*, 41(1), 77–81. doi:10.1152/advan.00171.2016
- Hodgkison-Willimas, C. & Gray, E. (2010). Degrees of openness: the emergence of Open Educational Resources at the University of Cape Town. *International Journal of Education and Development using ICT*, 5(5), 1-16. <http://ijedict.dec.uwi.edu/viewarticle.php?d=864>

- Hoover, E., & Harder, M. K. (2015). What lies beneath the surface? The hidden complexities of organizational change for sustainability in higher education. *Journal of Cleaner Production*, 106, 175–188. doi:10.1016/j.jclepro.2014.01.081
- Hylen, J. (2008). *Open Educational Resources; Opportunities and challenges*. OECD'S Publication: Paris.
- Ipaye, B. & Ipaye, C. B. (2012). *Opportunities and challenges for open educational resources and massive open online courses: The case of Nigeria*. March 12 <https://linc.mit.edu/linc2013/proceedings/Session1/Session1Ipaye.pdf>
- Ischinger, B. (2007). *Giving knowledge for free: the emergence of open educational resources*.
- Jung, E., Bauer, C., & Heaps, A. (2017). Higher education faculty perceptions of open textbook adoption. *The International Review of Research in Open and Distributed Learning*, 18(4). Retrieved on 12th February, 2020 from: <http://www.irrodl.org/index.php/irrodl/article/view/3120/4218>
- Kanwar, A. & Uvalic-Trumbic, S. [Eds.] (2011). *Neil Butcher. Basic guide to open education resources (OER)*. UNESCO/COL
- Karadia, A. & Seth, A. K. (2016). *Open educational resources: involvement of libraries and LIS professionals*. Accessed online on February 12, 2020 at retrieved at www.researchgate.net/publication/295401165
- Martindale, T. & Dowdy, M. (2010). *Personal Learning Environments*, in G. Veletsianos (Ed.) *Emerging Technologies in Distance Education*, pp. 152-164. Edmonton: Athabasca Press.
- Mitchell, C., & Chu, M. (2014). Open education resources: The new paradigm in academic libraries. *Journal of Library Innovation*, 5(1), 13-29.
- Mtebe, J. S. & Raisamo, R. (2014). Challenges and instructors' intention to adopt and use open educational resources in higher education in Tanzania. *The International Review of Research in Open and Distributed Learning*, 15(1). DOI: <https://doi.org/10.19173/irrodl.v15i1.1687>
- Muganda, C. K., Samzugi, A. S., & Mallinson, B. J. (2016). Analytical insights on the position, challenges, and potential for promoting OER in ODeL institutions in Africa. *The International Review of Research in Open and Distributed Learning*, 17(4). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/2465/>
- Mushi, H. M. K & Muganda, C. K (2013). Open education resource for national development. *Journal of Issues and Practice in Education*, 5(1) Retrieved on 10th February, 2020 from: repository.out.ac.tz/371/1/JIPE_

- Mwamlangala, D (2015). *Challenges of the Open Educational Resources: a comparative study between Shanghai Open University and the Open University of Tanzania*. Retrieved on 5th January, 2020 from: <http://www.oerafrica.org/resource/challenges-open-educational-resources-comparative-study-between-shanghai-open-university>
- Mwinyimbegu, C. M. (2018). The role of libraries and librarians in open educational resources in Tanzania: The case of selected public university libraries. *Library Philosophy and Practice*. accessed on 05 October 2019 at <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=5467&context=libphilprac>
- Nihuka, K. A., Mbvette, T. S., & Kihwelo, P. (2014). Open educational resources initiative at the Open University of Tanzania: challenges and lessons learned (*Doctoral dissertation, The Open University of Tanzania*). Retrieved from www.oerafrica.org/resource/open-educational-resources-initiative-open-university-tanzania
- Nkamnebe, E., Okeke, I., Udom, O. & Nkamnebe, C. (2015). Extent of Information and Communication Technology Skills Possessed by Librarians in Universities Libraries in Anambra State, Nigeria. *Information and Knowledge Management* 5(9): 22-31
- NUC (2017). *National Universities Commission guidelines for open and distance learning in Nigeria Universities*. Abuja, Nigeria: National Universities Commission
- Nwaohiri, N. M. (2021). Open Educational Resources (OER) In Nigerian Universities: Promotion And Awareness Opportunities For Academic Libraries For A Path To Higher Education Success. *Library Philosophy and Practice* (e-journal). 5583. <https://digitalcommons.unl.edu/libphilprac/5583>
- Ojedokun A Ayoku Victoria Nwamaka Okafor , (2015). ICT skills acquisition and competencies of Librarians'. *The Electronic Library*, 33(3) pp. 502 - 523: Retrieved on 15th March, 2020 from: <http://dx.doi.org/10.1108/EL-08-2013-0155>
- Ojiegbe, N. (2010). ICT competencies of library staff at the University of Abuja, FCT and University of Jos, Plateau state. *Unpublished dissertation presented to the department of library and information science, University of Nigeria, Nsukka*. Retrieved on 20th January, 2020 from: www.unn.edu.ng/publications/files/images/NGOZI%20PROJECT%20MLS.pdf
- Okamoto, K. (2013). Making higher education more affordable, one course reading at a time: Academic libraries as key advocates for open access textbooks and educational resources. *Public Services Quarterly*, 9(4), 267-283. doi:10.1080/15228959.2013.842397

- Okon, M & Ogbodo, C. (2014). Information and Communication Technology as a Necessity for Libraries and Librarians' of Nigerian Universities in the 21st Century. *Review of Information Engineering and Applications*, 1 (2): 39-54
- Okonkwo, C. A. (2012). Assessment of challenges in developing self-instructional course materials at the National Open University of Nigeria. *The International Review of Research in Open and Distance Learning*, 13(2), 221–230.
- Pitcher, K. (2014). Library publishing of open textbooks: The open SUNY textbooks program. *Against the Grain*, 26(5), 22–24.
- Roberston, R. J. (2010). *What do academic libraries have to do with open educational resources? Theme: Long term sustainability of open education projects*. In Open Ed 2010 Proceedings. Barcelona: UOC, OU, BYU. 2-4pp.
- Samzugui, A. S., & Mwinymbegu, C. M (2013). Accessibility of open educational resources for distance education learners: the case of the Open University of Tanzania. *HURIA: Journal of the Open University of Tanzania*, 14, 76-88. Retrieved on 15th March, 2020 from: <https://www.ajol.info/index.php/huria/article/view/110779>
- Shank, J. D. (2013). *Interactive open educational resources: A guide to finding, choosing, and using what's out there to transform college teaching*. San Francisco, CA: Jossey-Boss
- Smith, B., & Lee, L. (2017). Librarians and OER: cultivating a community of practice to be more effective advocates. *Journal of Library & Information Services in Distance Learning*, 11(1-2), 106- 122. Retrieved on January 20, 2020 from: <http://dx.doi.org/10.1080/1533290X.2016.1226592>
- SPARC (2016). *Open education*. (Retrieved January 6, 2020 from) <http://sparcopen.org/openeducation>
- Sutton, S. C. & Chadwell, F. A. (2014). Open textbooks at Oregon State University: a case study of new opportunities for Academic Libraries and Scholarly Presses. *Journal of Librarianship and Scholarly Communication*, 2(4), p. eP1174. <https://doi.org/10.7710/2162-3309.1174>
- Uhegbu, A. N. (2008). Globalization and national information policy in Nigeria. *Library Philosophy and Practice*. Retrieved on January 20, 2020 from: <https://www.webpages.uidaho.edu>.
- UNESCO (2016). *What are open educational resources (OERs)?* Retrieved on 15th March, 2020 from: <http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/what-are-open-educational-resources-oers>

- UNESCO. (2012). Paris Declaration on Open Educational Resources. Retrieved from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/Events/Paris%20OER%20Declaration_01.pdf
- UNESCO-COL (2011) *A basic guide to Open Educational Resources*, prepared for UNESCO and COL. <http://www.col.org/resources/publications/pages/detail.aspx?PID=357>
- Upadhyay, N. & Upadhyay, S. R. (2015). The role of academic libraries in Open Educational Resources (OER) Initiatives. *Library Waves*, 1(1), 28-32.
- Upneja, S. K. (2020). Contribution of library professionals and libraries in open educational resources in Indian scenario. *Journal of Library & Information Technology*, 40(2), pp. 97-103. DOI : 10.14429/djlit.40.2.15339
- Walji, S. (2014). Researching OER in Africa and the global South. *University World News*, 19, 335. Retrieved on 15th March, 2020 from: <http://www.universityworldnews.com/article.php?story=20140917111818454>
- Woodward, K. M. (2017). Building a path to college success: Advocacy, discovery and OER adoption in emerging educational models. *Journal of Library & Information Services in Distance Learning*, 11(1-2), 206-212. Retrieved on 15th March, 2020 from: DOI: 10.1080/1533290X.2016.1232053
- Wright, C. R. & Reju, S. A. (2012). Developing and deploying OERs in Sub-Saharan Africa: Building on the present. *The International Review of Research in Open and Distance Learning*, 13(2), 181-220