Research Article

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Management of Open Education Resources in Academic Libraries of Nigerian Public Universities

Abstract: With the growth of open educational resources (OERs), academic libraries have an opportunity to play a vital role in facilitating access, use, and development of OERs. This study explored the management practices of OER initiatives in Nigerian public university libraries. A sequential mixed method was adopted for this study using the sequential explanatory strategy. Quantitative method was used to gather data to inform the study population for the qualitative part of the study. The quantitative data was analysed descriptively, while the qualitative data was analysed thematically; both data were integrated into the discussion of findings to provide robustness and complementarity. The study revealed variability across institutions in the completeness of OER projects. It also found key drivers and challenges of integrating OERs in these institutions. While this study provided recommendations based on the findings, it also made suggestions for librarians seeking to expand their role in OER adoption through strategic leadership, faculty partnerships, and advocacy. The findings of this research contribute to the on-going discourse on OER adoption, offering insights into the challenges and opportunities facing academic libraries in sustaining OER initiatives.

Keywords: open educational resources, OERs, academic libraries, Nigerian universities

1 Introduction

The ubiquitous nature of information and communication technology (ICT) has transformed the way research and educational information is developed, accessed, and disseminated. Consequently, the users' needs in terms of access and dissemination of information have also changed. Arguably, open access is one of the significant ways to facilitate access to research and educational materials; thus, academic libraries and higher education institutions, in developing countries like Nigeria, are embracing open-access ideas to support academic teaching, research, and learning (Adebowale, Ibidapo, & Abiola, 2023). One of the services of the open access movement is the open education resources (OERs). The OER movement is driven by the need for freely accessible, reusable, and openly available online educational materials. OERs refer to publicly available teaching, learning, or research materials that are issued with an open license, allowing them to be used, shared, and adapted freely, with attribution to the authors, but devoid of the mandated permission required of copyrighted resources (Dare, Olujinmi, & Ifeduba, 2022). They include full courses or programmes, course materials, modules, student guides, teaching notes, text-books, research articles, videos, assessment tools, and instruments, interactive materials such as simulations and role play, databases, software, apps, and any other educationally useful materials (Commonwealth of Learning, 2017).

 OERs gained traction globally in the late 1990s and early 2000s as a means of increasing access to educational materials and enhancing teaching and learning. It was also in response to the challenges of the

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high cost of education resources, inadequate funding, affordability, and quality education. OERs can expand access to learning for all students, notably for those in non-formal educational settings, and bridge the gaps between non-formal, informal, and formal learning; which will invariably increase student participation in higher education (Bringula, 2016). Furthermore, since the emergence of OERs, they have become an important method of providing access to and enhancing the teaching and learning experience for both lecturers and students which have created substantial educational opportunities, thereby promoting lifelong learning for individuals and the government (Zaid & Alabi, 2020). Arguably, the advancement and ubiquitous Internet and mobile technology have also made OERs sought after in the Nigerian educational system (Gambo & Aliyu, 2017). In response to this necessity, academic libraries around the world are developing institutional OER initiatives or creating OERs themselves; and in some instances, collaborating with IT professionals and the centres for open and distance learning. As centres of knowledge management on campuses, academic libraries play a pivotal role in improving the discoverability, use, and impact of OERs. This may involve assisting faculty with identifying and integrating OERs into courses, providing copyright and open licensing advice, hosting OER repositories and platforms, supporting accessibility and metadata improvements, tracking OER usage analytics, and providing open publishing support services (Hutson et al., 2022).

In Nigeria, the 2017 National Universities Commission (NUC) draft OER policy mandated educational institutions including universities to set up their own OER repositories. The policy provided guidelines for the creation and use of OERs to increase access to and support quality teaching, learning, and research in the Nigerian Higher Education System (Agbu, Okechukwu, Dahunsi, & Vincent, 2015). According to the policy, materials that constitute OER include curriculum maps, course materials, textbooks, streaming videos, pictorial materials, multimedia applications, podcasts, and any other materials. Consequently, several Nigerian universities adopted OER initiatives, launching OER repositories or leveraging existing repositories to host resources such as lecture notes, presentations, videos, journal articles, conference papers, and course materials. Furthermore, the NUC ranked the OER initiatives in the universities in 2018. However, effective OER management practices entail a lot more than policy mandates. According to Wordu and Nwaizugbu (2021), it requires understanding user needs and the enabling factors; successful inter-departmental partnerships, and developing sustainable service models taking into cognisance the Nigerian university context. Furthermore, several studies on OER in Nigeria (Gambo & Aliyu 2017; Jong, Munnik, & Will, 2019; Onaifo 2016; Zaid & Alabi, 2020) focused on reviews and developing sustainable frameworks and policies. Other studies (Akomolafe & Adegun, 2014; Jong et al., 2019; Salau, Oyedum, Abifarin, Udoudoh, & Alhassan, 2020; Wiche & Ogunbodede, 2021) focused on the perception and awareness of OERs by academic staff, students and librarians respectively. These studies and the NUC draft policy have set a precedence for the adoption of OER in universities. However, no study to the best of the researcher's knowledge has investigated the management of the OER initiatives 6 years after the initial policy mandate. Consequently, this study explored the current state of OER management in Nigerian public university libraries with the following objectives:

(1) find out the availability of OER links, repositories, or databases on the websites of the universities or libraries;
(2) identify the types of OERs accessible in the universities or libraries; and
(3) interview selected librarians/repository managers to understand the management of OERs in their institutions.

2 Literature Review

2.1 OERs in Higher Education Systems

OERs emerged in the late 1990s and early 2000s when the prices for textbooks began to increase[1]. A United Nations Education Scientific and Cultural Organisation (UNESCO) meeting held in 2002 heralded the term Open

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1 Experiential Learning in Instructional Design and Technology, Chapter 4.1 What is OER?

Education Resources (OER) and subsequently in 2012; the Commonwealth of Learning and UNESCO organised the first world OER Congress. This resulted in the 2012 Paris OER Declaration, calling upon all countries to release teaching, learning, and research materials developed with public funds under an open licence to allow their reuse, revision, remixing, and redistribution without the permission of the copyright holders (Hutson et al., 2022). OERs refer to teaching, learning, and research materials that reside in the public domain or are published under an intellectual property license that allows for free use, adaptation, and distribution (Osuigwe, 2023). These resources have become an important phenomenon in higher education for over two decades since its inception.

David Wiley's framework of 5Rs describes what can be done with OER: Retain: the right to make, own, and control copies of the content; Reuse: the right to use the content in a wide range of ways (e.g., in a class, in a study group, on a website, in a video); Revise: the right to adapt, adjust, modify or alter the content itself (e.g., translate the content into another language); Remix: the right to combine the original or revised content with other open content to create something new; Redistribute: the right to share copies of the original content, your revisions or your remixes with others (e.g. give a copy of the content to a work colleague) (Colson et al., 2017; Commonwealth of Learning, 2017). One of the best-known early examples of the application of OERs over these years is the launch of the OpenCourseWare programme in 2002 by the Massachusetts Institute of Technology (MIT); the MIT designed a repository for all of their digital course materials and shared them with open licenses. Hundreds of other institutions have since launched their own OER programmes, following the MIT model, and have merged into the Open Education Consortium (Abdu, 2022). Notably among these OER programmes is the University of Edinburgh Open Education Resources (OER) project.

The proponents of OER initiatives believe that access to relevant learning resources is an important aspect of lifelong learning, and the ability to provide that access at the necessary scale is a challenge. Thus, OERs are essential for ensuring inclusive and equitable quality education and lifelong learning opportunities for all, as outlined in the Sustainable Development Goal (SDG) 4, as well as for supporting citizens in gaining sustainable livelihoods (Agbu et al., 2015). In the global south, the high and rising costs of textbooks and instructional materials have been a hindrance to equitable education. One solution that can help reduce this challenge is to replace them with OER, which are free or low-cost online textbooks, articles, videos, labs, etc., that faculty members may choose to use in their classes in place of purchased materials (Agbu et al., 2015).

Consequently, efforts have been in place from the global north to achieve this purpose. For instance, many higher education institutions in countries where OER initiatives emanated have focused on the creation of OERs and open tools and infrastructure to access OERs. Although these efforts have cascaded to Africa over the past decade, through access to OER repositories, these resources appear to remain largely unused by lecturers and students from the African continent (Belikov & Bodily, 2016; OECD, 2007). However, it should be noted that there has been an improvement in the level of awareness among students and lecturers as reported in more recent studies (Bringula, 2016; Jong et al., 2019). This improved awareness can be attributed to the fact that Nigeria is becoming a force to reckon with in the OER movement mainly driven by the adoption and deployment of the OER initiatives at the top level by the NUC, thus enabling a wider use and application in Nigeria educational community.

Hitherto, the National Open University of Nigeria (NOUN), National Teachers Institute, Nigerian Institute for Advanced Legal Studies, and Yaba College of Technology are credited as the first proponents of the OER initiative in Nigeria (Agbu et al., 2015; Bringula, 2016). However, in recent times, other higher institutions especially universities have joined the open access movement as evidenced in the deployment of the DSpace open-source-based repository by most universities, which serves as a space for faculty research outputs. These two notable efforts led to the validation of the draft OER policy and the launching of the Nigerian University System Open Education Resources (NUSOER) in 2017 by the NUC (Zaid & Alabi, 2020). The purpose of the NUSOER is to serve as the national repository for all OERs held by universities in Nigeria. Subsequently, all Nigerian universities were mandated to host full-text non-copyrighted research outputs and educational resources on their websites, with a ranking based on this initiative held in 2018.

2.2 Role of Academic Libraries in the Management of OERs

Academic libraries globally play a pivotal role in the management of OERs, which is not surprising as the core job description of librarians is the management and organisation of information resources. Recently, the format and approach to managing the resources have changed and librarians have found themselves having to build capacity for new skills to manage them effectively. A case in point is the OER initiatives developed in higher education institutions. Studies have suggested the roles academic libraries must play in spearheading the OER movement; they include assisting faculty to identify and integrate OERs into courses, hosting OER repositories and platforms, among others (Abdu, 2022; Belikov & Bodily, 2016; Hutson et al., 2022; Ogunbodede & Cocodia, 2023; Percy & Van Belle, 2012).

Several objections to OER by faculty have been cited in the literature; notably among them are lack of information about the OER concept; lack of discoverability of repositories of OER, and confusion over the difference between OER and digital resources (UNESCO, 2019). Faculty members bother about the robustness of OERs and are concerned about the time and effort to evaluate their appropriateness for their intended use compared to traditional textbooks (Percy & Van Belle, 2012). Provision of literacy skills has been part of the librarians' work, hence taking up this role to educate faculty and present information on OER in a digestible format isn't out of place. Furthermore, the funding and sustainability needs of OER projects make the promotion of OER all the more important in higher education today and pave the way for librarians with a deep understanding of the issues to take a leadership role in creating sustainable models for successful OER adoption. One of the suggestions is approaching OER as an educational innovation and applying a generalised theory for innovation adoption (Jong et al., 2019).

3 Method

A sequential mixed method was adopted for this study using the sequential explanatory strategy. The sequential explanatory strategy in mixed methods research involves first collecting and analysing quantitative data, followed by the collection and analysis of qualitative data in a second phase, which is designed to expand upon the findings from the initial quantitative phase (Creswell, 2009). Quantitative method was used to gather data to inform the study population for the qualitative part of the study; in this study, the example stated by Tashakkori and Teddlie (1998) where the results from one method can help identify participants to study or questions to ask for the other method was used. Furthermore, in line with one of the philosophical assumptions of mixed methods, stated by Creamer (2018), the qualitative and quantitative data for this study were analysed and presented separately in the results. The quantitative data was analysed descriptively, while the qualitative data was analysed thematically, but integrated in the discussion of findings to provide robustness and complementarity. Consequently, an adapted procedure of Hurrell (2023) was used for this study. Quantitative data were gathered from.

3.1 Content Analysis of Public University Websites

A list of 115 public universities was retrieved from the NUC website (www.nuc.edu.ng); a subset of 96 universities was further generated, (this included all universities with website Uniform Resource Locator URLs). The universities whose websites were not available through the URLs, as of December 24, 2023, were excluded from the final list of 85 universities (List attached as Appendix). Using the list generated from the NUC website, the researchers gathered and analysed data for this study from four sources for each university: the institution's website, institutional repository, OER webpage links, and the university library webpage/sites. The researchers visited these websites from October to December 2023 and followed a structured approach to collect information about the following:

  i. availability of OERs;
 ii. OER sources;
iii. availability/accessibility of self-authored OERs.

The researchers examined the four sources on the websites (the institution's website, institutional repository, OER webpage links, and the university library webpage/sites), for descriptions of the use of OERs and links to self-authored or external OERs. The researchers defined self-authored OERs as OERs created or designed by lecturers, authors, or students in these universities. These OERs include journal articles, conference papers/presentations, course notes, lecture notes, inaugural lectures, presentations, full-text e-books, past questions, codes, and research data.

Furthermore, qualitative data that informed some part of the interview questions, particularly the question on *Enabling factors for the adoption of OER projects in institutions/libraries* were gathered through:

3.2 Analysis of the Existing Policies, Report, and Literature on OER Policies

The researchers perused the report of Osuigwe and Levey (2023) on the UNESCO OER Recommendations by Abdu (2022), the NUC OER policy, and the Tertiary Education Fund (TETFUND) book development guidelines. The researchers also perused the existing literature on OER policies in Nigeria.

3.3 Interview of Repository or OER Managers

The result from the content analysis of the university websites was used to identify the universities whose librarians were interviewed for the management of OER in their libraries. Based on the data collected from the website content analysis, the researchers sampled seven (7) universities with self-authored OERs indicated in Table 1.

The researchers also got the contact details of librarians in charge of electronic resources in these institutions; where applicable, the librarians referred the researchers to other staff in charge of the management of OERs in these institutions. The consent of the librarians was sought for the interview. The staff in charge of OERs at Bayero University, Kano, were unavailable to be interviewed.

The interview questions consisted of seven open-ended questions. These questions were designed in a semi-structured form to enable the researchers to explore and elicit additional information about the management of OERs in these institutions, specifically on: Implementation/management practices, enabling factors for the adoption of OER projects in institutions/libraries, OER support services provided by the library/institution and challenges of managing OERs in libraries. The interview data was coded openly to enable the researchers

Table 1: Universities of librarians interviewed

S/N	University	Status
1	Lagos State University	State
2	Bayero University, Kano	Federal
3	Federal University of Technology, Minna	Federal
4	Ondo State University of Medical Sciences	State
5	Federal University of Technology, Owerri	Federal
6	University of Abuja	Federal
7	University of Port Harcourt	Federal

to identify themes that emerged from the data. The identified themes were then analysed thematically based on the objectives of the study. The interview questions are attached as Appendix.

4 Results

4.1 Findings from the Analysis of the Existing Policies and Report on OERs

The NUC OER policy[2] and the TETFUND Book development guidelines were analysed by Ogunbodede and Cocodia (2023), and some observations were pointed out. Further discussions on these findings are presented in the discussion section of this study:

1. The engagement with OER is still at the top level, with minimal awareness and capacity development programmes, thus the slow implementation rate of OERs at institutional level. For instance, section 2.0 (i) of the draft policy states that:

   In line with the OER goals, higher education regulatory agencies and all Higher Education Institutions in Nigeria shall be committed to the philosophy of OER in raising awareness, building capacity and fostering positive attitudes in educators, learners and researchers, regarding the development and use of OER, with a view to enhancing quality and equity in education.

   Yet, 54.3% of 420 lecturers in selected Nigerian universities, who participated in the Nigerian Universities Commission's (NUC) OER ranking exercise, were not aware of their university's participation in the OER initiative; also, 83.6% have never or rarely used OERs for their academic activities (Zaid & Alabi, 2020).
2. A lack of synergy between the top implementers like the NUC and TETFUND which the current study corroborates. A perusal of the NUC OER policy by the researchers of this current study indicated that the OER steering committee involved TETFUND at some level; however, the level of involvement of TETFUND is unclear in the NUC draft policy. In addition, the TETFUND doesn't have a clear policy or guideline on the sharing of publicly funded published books through the Creative Commons Licences (TETFUND, 2020).

   Furthermore, the researcher searched online to ascertain the availability of the proposed Nigerian Higher Education OERs database and couldn't find any URL for the database. It is also unclear whether the OER policy has been approved by the Federal Executive Council because there is no evidence of such in any gazette.

4.2 Website Analysis

4.2.1 Availability of OERs in the Institutions

The researchers found that 51% of the universities had no OERs (either self-authored or external) available from the institutional or library websites (Figure 1).

4.2.2 OER Sources

In the analysis of institutional websites, the researchers sought to find out where the OERs are domiciled. 34 universities had OER links, OER repositories, or repositories with OERs. OER links or contents were not

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2 National Policy on Open Educational Resources in Higher Education. Accessed from https://www.nuc.edu.ng/wp-content/uploads/2024/06/OER-POLICY-REVIEWED-DOCUMENT.pdf.
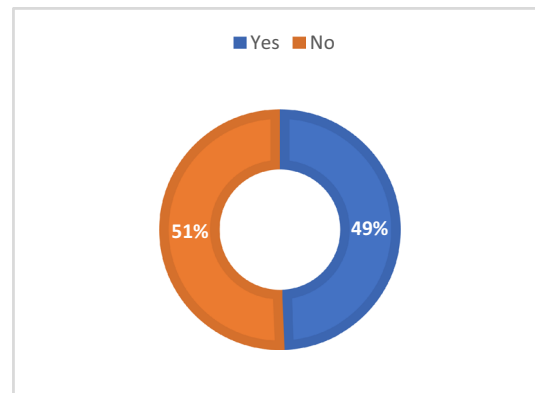
Figure 1: Availability of OERs (*n* = 85). Source: Field data.

available in 24 other universities, while 26 universities had links to external OER databases (journal articles/courseware). The researchers observed that some of the institutions have an OER repository link and the standard institutional repositories (Figure 2).

4.2.3 Availability of Self-Authored OERs

In the analysis of the websites, the researchers found that self-authored OERs were not available in majority (76%) of the universities (Figure 3). Only 24% had self-authored OERs, and they include inaugural lectures, past questions, lecture notes, conference papers, videos, and E-books. Apart from the resources in the repositories which were mainly journal and conference papers, most of the self-authored OERs were inaugural lectures and past questions. It is pertinent to note here that all of the available 'self-authored OERs' found in this study might ironically not fall under the categories of OERs because there was no Creative Commons Licence attached to them. Only one of the universities had self-authored OERs licensed under a Creative Commons Attribution Non-Commercial-No Derivatives 4.0 International License. This gives credence to the findings of Meinam, Meinam, Deepti, and Singh (2023) that engagement with OERs is only prioritised and discussed at the top level, with limited focus on scholarship and capacity development programmes. Evidently, these universities labelled these resources as OERs, while they are not indicating the lack of comprehensive understanding of OER.
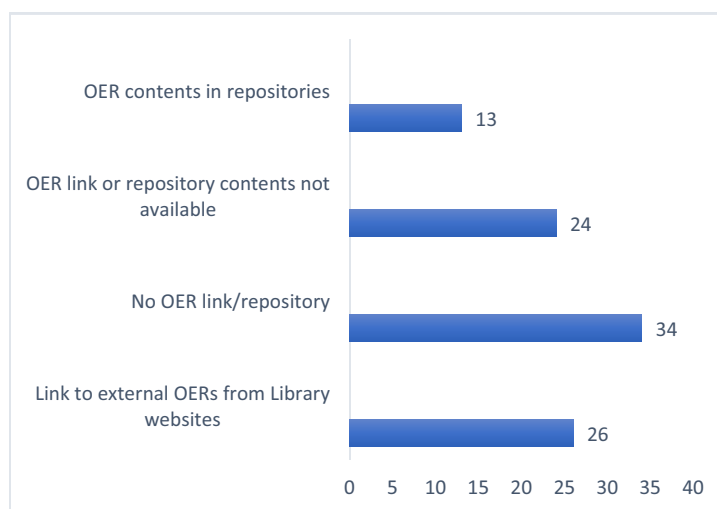

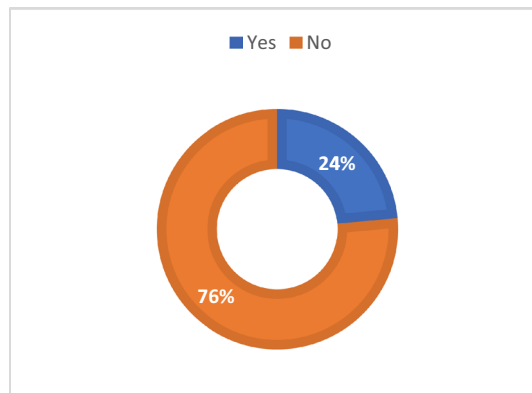**Figure 2:** OER sources (*n* = 85); Source: Field data.

Figure 3: Availability of self-authored OERs (*n* = 85). Source: Field data.

4.3 Interviews of Repository or OER Managers

The interview of librarians in charge of digital resources provided additional details about the management of OERs in institutions or libraries. Specifically, data were collected on implementation and management practices, enabling factors for the curation of OERs, OER support services provided by the library/institution, and challenges of managing OERs in the library.

4.3.1 Implementation/Management Practices

It was inferred from the interview data collected that the OER project in the institutions was specifically a NUC-mandated project. In some institutions, a committee was set up to carry out the project. For most of the institutions, the Information Technology (IT) unit specifically carried out the project. The OERs were collected directly from departments and units and in some instances courses from the open distance learning centres. These resources were uploaded at once. However, in one of the universities, the library ICT unit was responsible for implementing and managing the OERs. The librarians get the OERs directly from faculty members or the department sends them to the library.

> *"The library ICT unit is responsible for implementing and managing OERs; librarians upload and collect the contents."*

From the responses, the researchers observed that the uploading of the contents stopped after the initial implementation of the project. Except for institutions that had existing repositories before or after the OER project, the management of the OER projects also stopped.

One of the respondents stated thus: *"The OER project was an NUC initiative and if you notice on the website, the contents have not been updated. In my university, a committee was set up and I was co-opted at the later stage of implementation."*

4.3.2 Enabling Factors for the Adoption of OER Projects in Institutions/Libraries

The NUC policy directive was the major driver for the curation of OERs in all of the universities that had OERs. However, one of the librarians mentioned that the recent Times Higher Education (THE) ranking of universities that factored research outputs in repositories also helped increase the number of OERs in their repository.

Furthermore, the need for more resources to support library resources is another driving factor in the adoption of OERs. A number of libraries in the institutions under study were leveraging external OER

databases and Massive Open Online Courses (MOOC) courseware to support their subscribed resources for accreditation assessments. MOOCs are similar to OERs; however, open licensing is the defining feature of OERs which allows usage and reuse without permission (Osuigwe, 2023).

> "A committee was set up to analyse the indicators of the Times Higher Education ranking metrics and the number of open research outputs was a pointer. Consequently, a committee was set up with one of the terms of reference to upload more OERs (lecture notes, past questions) on the repository."

An interesting perspective shared by one of the librarians is that initiatives like the OER project are only taken seriously when the directive is from top management.

> "Most times when junior library staff on their own share ideas on projects like this without the buy-in or understanding and push of the university librarians, (who are part of the university leadership), the other units involved like the IT units are usually lethargic about such initiatives."

This finding is similar to the study of Zaid and Alabi (2020) where over half of the total number of respondents (56.1%) proposed the institutional model, where funding for OER projects represents a part of the institution's regular programme and is justified as constituting part of its organisational mission. The impracticability of academic libraries implementing large-scale adoption of OE practices, without the cooperation of other stakeholders, was also emphasised (UNESCO, 2002). Similarly, institutional support was mentioned as one of the factors required for designing MOOC by faculty members in Central Universities of India. However, some MOOCs do not offer open licensing like OER (Purkayastha & Sinha, 2023). Thus, these findings and assertions from the other studies are apparent reasons why the focus of the libraries under study was mainly on using OERs from external OER databases.

Furthermore, intellectual property retains considerable financial implications in Nigeria. Academics are hesitant to the idea of open licensing of intellectual property, such as full textbooks, because of the monetary disincentive. The reluctance is further exacerbated when it does not directly influence a researcher's promotion prospects. Activities related to OER are viewed as forms of research, teaching, and service but are not incentivised as part of the assessment for promotion and tenure (Zhou, 2022). This holds particular significance for researchers in Nigeria; academics don't exert scarce resources where there are no tangible gains. The driver of developing OERs seems to be more about its social value which is geared towards sharing knowledge for the common good; this is perceived by content developers as unattractive due to its low business value (Dare et al., 2022). Conversely, outside Nigeria, national identity, individual researcher's ideology, and personal interest in OER were factors motivating the design of OERs and MOOCs (Purkayastha & Sinha, 2023; Zhou, 2022). On the bright side though, there are discussions about the quality of OERs and how the adoption of OER could impact lecturers' chances of promotion and tenure in Nigeria (Zaid & Alabi, 2020).

4.3.3 OER Support Services Provided by the Library/Institution for Librarians

A good practice observed from the interview with the e-librarians was that some of these libraries were promoting the use of resources from the external OER databases for research and learning purposes. Also, in addition to the links on the repositories, some had downloaded these open books for offline access, while others had flyers with these links. However, the impact cannot be ascertained because a low level of familiarity with OER exists among lecturers and a subsequent low level of use of OER for teaching among lecturers in South West Nigeria (Zaid & Alabi, 2020). The researchers of this current study observed that the libraries under study do not promote the use of these resources for the development of self-authored OERs using David Wiley's 5R options of OERs. Arguably, this may be due to the inadequate capacity development of librarians in OERs and the Creative Commons licence. One of the librarians stated that the training on the development of OERs organised by the institutions was only for course instructors of the Open and Distance Learning centres.

> "The only training I attended was on the development and implementation of OER policy, and no librarian was invited. I only attended due to my personal relationship with the organisers of the training in the university."

Some librarians interviewed mentioned attending trainings on open access but specifically on the management of OERs once. The training was organised by the NOUN. Another librarian stated that the training on OER content development is usually carried out by the Centre of Open and Distance Learning for the content developers. The library is neither involved nor are librarians invited to these trainings. Looking at this situation holistically, there are areas on the use of OERs and the creative commons licensing the librarians in this institution can train the content creators about, which in the opinion of the researchers will reduce the low awareness of OERs.

4.3.4 Challenges with Managing OERs in Libraries

Findings from the interview revealed that the challenges with managing OERs in the institutions are more with self-authored OERs than OER external databases. The libraries benefit from OERs as support resources for accreditation purposes and partly for their users. Thus, there are little challenges with them. Even in cases where internet connectivity is an issue, libraries have devised a means of downloading these resources on their workstations for offline use. Interestingly, the focus of OERs has to a large extent been on the benefits of OERs, especially how these resources save study costs and improve access to study materials for users (UNESCO, 2002); and in the case of Nigeria, support library resources for academic accreditation. This can be attributed to the social value benefit of OERs, as the tangible return of investment does not flow back to the investors or authors as the case may be.

Low level of awareness of the right concept of OER was another challenge reported from the interview data, and this is from the top-bottom. One librarian stated:

> "The use of the term OER in Nigerian institutions is too generic and lacks the holistic understanding of the concept. Some of the OERs in the institutions are open but permission must be given to reuse or remix them."

Another challenge identified with the management of OERs is the subtle intersection of roles between the ICT units and libraries when initiatives like the OER project are to be implemented. A librarian stated:

> "There should be a better handshake between the ICT units and libraries. Whenever the library wants to initiate a project, it is pertinent for the ICT unit to realise that it goes beyond just deploying the technology. The organisation, structuring and management should be the responsibility of the library".

The dual responsibilities (academic and administrative) of librarians in these institutions constrain them to advocate for and create awareness of OERS. The researchers of this current study observed from the data collected that the sensitisation of OERs in most of the libraries is usually one-off, and is about usage for research and teaching, not OER content development. The libraries where sensitisations and awareness on open access are routinely carried out have organically built the confidence of their users such that when the concept of developing openly licensed OERs is sold to them, they will embrace it.

5 Discussions

The findings from this study revealed that the OER initiatives in Nigerian public universities were low. Also, the existing OER initiatives were set up due to 'normative pressure' (Bringula, 2016). Normative pressure is a practice where institutions adopt innovations because stakeholders are embracing or have mandated the same practice; most times the adoption is with little or no management sustainable plan. Interestingly, since UNESCO's initial involvement, researchers have warned that simply providing access to OER is not enough without support systems that encourage and facilitate its use (Zaid & Alabi, 2020). A pointer to this is that none of the institutions studied had an available OER policy on their website; most of the OER initiatives in these universities were based on the 2017 NUC OER directive to universities, which seems to have been halted, and

later the recent THE ranking of universities that factored resources in repositories. The implication is thus shaky and ill-managed OER projects, as evident in the findings of this research. A similar situation occurred with the implementation of institutional repositories *ab initio* (Salau et al., 2020).

At the national level, there seems to be no holistic understanding among the stakeholders on the concept of OER which cascades down to the institutional and individual level, thus issues of policy summersault are apparent. A pointer to this fact is that the TETFUND, a stakeholder in the development of the draft OER policy, doesn't have a clear policy on the sharing of publicly funded outputs from book development and research publications through open access publishing and licences. For instance, the books published through the book development fund which were distributed freely in print copies to libraries were not copyrighted for open licenses, which will make digitisation and subsequent sharing of these books, translating or illustrating these books without permission from the authors illegal. Debatably, TETFUND left the license option at the discretion of the authors, which shouldn't be since they were part of the OER validation meeting in 2017 and should understand the concept of OER better and incorporate it in 2021. Leaving this option at the discretion of authors and publishers who are still used to the traditional copyright ownership retained, and unaware of open licenses and OERs (Adebowale et al., 2023; Belikov & Bodily, 2016) is arguably why these books were not openly licensed. The TETFUND guidelines were more about reviving and revitalising academic and scholarly publishing through the printing presses than opening up these resources (TETFUND, 2020).

Furthermore, the situation is not different at the institutional level. The researchers observed that some of the OERs at the institutional level were not distributed in such a way that the focus was for others to adopt or adapt them to their teaching, research, or even for developing other OERs. For instance, one of the institutions had a fee-based model to access their OERs. Two other institutions had access control and digital rights as part of the functionality of their repositories. Only one institution published its OER under the Creative Commons license. Also, although the NUC directive to universities was to include full-text, non-copyrighted resources, including journals, articles, lecture notes, etc., these resources were not published under the Creative Commons open licenses. The fact that they are open doesn't mean the contents can be re-used or remixed without permission. Open licenses provide a way for content creators to allow others to use the information resources without undue restrictions, such as requesting permission to translate or illustrate them Osuigwe (2023). Yet, the majority of these *'OERs'* in public universities were without the creative commons open licences. The principles of open access to education resources are based on the premise of David Wiley's 5R model. The 5R model asserts that the basis of publishing educational resources is sharing them openly in such a way that it is easy for others to adopt or adapt them to their teaching, thereby making it easy for students and educators to be less dependent on commercial resources and instead work with resources that can be reused, revised, retained, remixed, and redistributed (Wiley, 2014). The fear of plagiarism due to the holistic understanding of OERs may be an enabler of the low use of OERs for teaching (Zaid & Alabi, 2020).

The fee-based model practised in one of the institutions deviates from the NUC directive. However, it is pertinent to note here that, there may be justification for the fee-based model as funding is very fundamental in the management process of projects. This situation indicates two things: first, there hasn't been proper monitoring and evaluation of the OER projects since the 2017 directive. Secondly, funding is the lifeline of sustainable OERs and educational institutions providing funding in silos may not be sustainable. From the literature, the sustainability of initial initiatives launched by educational institutions to provide funding for professors to create OERs in developed countries proved difficult (Zhou, 2022). Thus, there is the need to have a holistic sustainability and management model, which includes funding for OER projects, to be included in the national OER policy or educational institutions pooling funds together. Other sustainability models that can work within the Nigeria context were discussed by Zaid & Alabi (2020).

Additionally, some institutions had existing repositories with some OERs; surprisingly, instead of leveraging this existing infrastructure, some institutions set up separate OER repositories. While it can be argued that some of the content on the existing repositories may not be OERs because of the rights of third-party publishers, especially for books and journals, ironically, some of these contents were included in the OER repositories. In the opinion of the researchers of this current study, OER sub-communities could have been created specifically for this purpose in the institutional repositories. Commendably, thirteen (13) institutions retained their existing repositories and merged the repository contents with the set-up OER repositories.

It is pertinent to state here that the essence of the Open Access Movement and, by extension, the OER initiative is availability and visibility. This seems to be lost with OER initiatives in Nigeria. The institutions with self-authored OERs were situated in different locations outside open repositories. Open repositories have several characteristics that make them ideal locations for the management and visibility of OERs like the indexing on Google and Google Scholar in comparison with other online locations on institutional websites (Hurrell, 2023). One of the institutions under study had a fee-based system to access OERs on their website, which negates the essence of openness.

Another interesting finding from this study is that the ICT units are enablers and not drivers of OER initiatives in the institutions under study; thus, leaving these projects solely at their discretion sometimes comes with management challenges. Most of the initiatives were implemented by the ICT unit or committees that leveraged the expertise of the ICT units. However, deployment of technology is only an aspect of OER projects, a lot goes into the administration and management of these resources that librarians can handle, by their training. The researchers observed that after the initial deployment of the technology, nothing much happened afterwards, which showed a gap to be filled by librarians; librarians that weren't involved in these projects' *ab initio*.

Consequently, university librarians must have sufficient knowledge or comprehend issues around teaching, learning, and research support services and how to advocate for and negotiate their roles at the national level and in individual institutions. The lack of enthusiasm and drive on the part of some university librarians for initiatives such as the OERs goes a long way in determining their inclusion in such projects if and when it is to be taken up at the top management level. For instance, it can be argued that the OER project started as an NUC initiative, it wouldn't be out of place for university libraries to inherit these projects and play a consistent role in the promotion, management, and sustainability of OERs. The researchers observed that librarians in Nigeria usually play laid-back roles when they should be championing these initiatives, which could be due to a lack of capacity. The African Library and Information Associations and Institutions and, recently, the Librarians' Registration Council of Nigeria have taken up this challenge and have been building the capacity of African librarians on the OER initiatives (Itasanmi, 2020; Osuigwe & Levey, 2023). However, this is not sufficient, and thus, it is pertinent for the associations at local and national levels, institutions, and OER development partners to include this as part of the capacity development initiatives. A learning model similar to the Scholarly Publishing and Academic Resources Coalition (SPARC) capacity building initiative https://sparcopen.org/ where an annual cohort of librarians in Africa/Nigeria go through a leadership programme on Open Access initiatives might be a good model to consider. One of the outcomes of such a leadership programme should be building OER community of practices at the institutional level. This would help increase the awareness and use of OERs for teaching and learning. In addition, the curriculum of library schools should be reviewed to include trends such as open-access publishing and scholarly communication.

Looking at the issue from another perspective, the lethargy portrayed by librarians could be because advocating and managing initiatives like the OER projects are not included in the assessment metrics for the promotion and tenure of academic librarians; hence the trend to focus more on current research assessment roles like publishing in journals, conference proceedings and books. Issues like the above give credence to the growing trend of calls for cultural shifts in the research ecosystem towards more holistic and equitable forms of research assessment outside traditional research outputs (Salau, Olijhoek, & Oaiya, 2024). Other researchers have also called for the recognition of librarians' dual responsibilities of delivering quality library services to patrons and creating scholarly publications (Adebowale et al., 2023; Hollister & Jensen, 2023). Maybe, the academic librarians in Nigeria will take up their rightful place in the management and advocacy of open access initiatives through routine training and sensitisation in relevant OER areas.

6 Conclusion

The study concluded that the management of OERs in Nigerian institutions and libraries is poor. Arguably, this is due to the incoherent implementation and non-inclusion of librarians at the initial implementation stage. Its penetration is also focused more on the availability and use of external OERs than the development of self-

authored OERs from Nigerian authors. The researchers find it interesting that members of the Association of University Librarians of Nigeria were involved at the validation meeting of OER policy and the implementation strategy committee level; yet at the individual institutions, librarians were exempted during the implementation of the OER projects in some institutions. This infers a disconnect of librarians with the key roles of open access advocacy that they should be championing.

Academic librarians in Nigeria have not taken a strategic leadership position in the management of OERs from the top to the bottom. Although, it can be argued that most librarians are still grappling with the concept of OERs and may lack the capacity. The library associations at local, national, and regional levels must intensify their OER capacity development initiatives. There is a need to approach the OER capacity-building initiative from a more structured and informed perspective; an adaptation of the SPARC capacity-building model can be looked into. Moreover, there is also the need to start having a cultural shift towards the inclusion of other assessment criteria for promotion and tenure aside from core traditional research and teaching outputs for academic librarians in most universities. This will encourage more librarians to be abreast and take up initiatives like the open access movement.

Despite these inherent issues, an interesting perspective noted from the findings of the study is that in Nigeria, institution mandate drives the implementation of projects like the OER project. However, for the management and sustainability of these projects in the institutions, there must be some form of healthy competition or assessment metrics as in the case of the use of external OER databases for accreditation and the case of the NUC OER ranking exercise. Thus, there is a need to holistically look at the management of OERs from an organic angle using the social value benefits.

Subsequently, the researchers are recommending that the NUC include institutional-based OER projects similar to MIT's OpenCourseWare project and the University of Edinburg OER project as part of accreditation scoring and institutional ranking metrics. Stakeholders like the TETFUND can provide funding support. In addition, the institutions can collaborate with development partners working on quality education for all (SDG 4). These funding models will go a long way in ensuring the sustainability of these initiatives.

7 Research Limitations

The researchers collected data on all forms of OER initiatives (online and offline) managed by the academic libraries in the institution under study. However, a possible limitation can be the omission of OER projects managed outside the libraries, which the researchers may have missed since the focus was only on OERs available on the websites and information from the e-resources librarians. Further research can investigate the availability of OERs managed by other units like the Centres of Open Distance Learning in the universities.

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References

Abdu, H. A (2022). Call to action: OER policy status in Nigeria. *Open Education Virtual Conference*, Online, 17–20 October, 2022.

Adebowale, J. A., Ibidapo, O. S., & Abiola, H. (2023). Mentoring support for librarians' research productivity in southwestern Nigeria: A study of quantity of publications in quality outlets and online channels. *The Journal of Academic Librarianship*, *49*(1), 1–8.

Agbu, J. E., Okechukwu, O., Dahunsi, O., & Vincent, A. T. (2015). *Sharing the experiences of National Open University of Nigeria in its journey toward understanding and embracing OERs*. Hagen, Germany: European Association of Distance Teaching Universities.

Akomolafe, O. C., & Adegun, O. A. (2014). Utilisation of open educational resources (OER) and quality assurance in Universities in Nigeria. *European Scientific Journal*, *10*(7), 535–545. Available at https://eujournal.org/index.php/esj/article/view/3001 (accessed 24 December, 2023).

Belikov, O., & Bodily R. (2016). Incentives and barriers to OER adoption: A qualitative analysis of faculty perceptions. *Open Praxis*, *8*, 235–246. doi: 10.5944/openpraxis.8.3.308.

Bringula, R. P. (2016). Factors affecting web portal information services usability: Acanonical correlation analysis. *International Journal of Human-Computer Interaction*, *32*(10), 814–826. doi:10.1080/10447318.2016.1199180.

Colson, R., Scott E., & Donaldson R. (2017). Supporting librarians in making the business case for OER. *The Reference Librarian*, *58*, 1–10. doi: 10.1080/02763877.2017.1377665.

Commonwealth of Learning (COL). (2017). *Open educational resources policy for higher education in Nigeria*. Accessed at https://oasis.col.org/server/api/core/bitstreams/050756bc-9cad-441f-bd47-b7cd6b37a3a5/content (Accessed 24 December, 2023).

Creamer, E. G. (2018). *An introduction to fully integrated mixed methods research*. Los Angeles: SAGE Publications, Inc. doi: 10.4135/9781071802823.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed methods approaches*. California: Sage.

Dare, T. O., Olujinmi, O. O., & Ifeduba, E. C. (2022). Book publishing research in Nigeria: 1960–2023. *Global Journal of Education, Humanities and Management Sciences (GOJEHMS)*, *4*(2), 139–161.

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. *DESIDOC Journal of Library & Information Technology*, *37*(6), 437–442. doi: 10.14429/djlit.37.10628.

Hollister, C. V., & Jensen, J. M. (2023). Research productivity among scholarly communication librarians. *Journal of Librarianship and Scholarly Communication*, *11*(1), 1–25. doi: 10.31274/jlsc.15621.

Hurrell, C. (2023). Research assessment reform, non-traditional research outputs, and digital repositories: An analysis of the declaration on research assessment (DORA) signatories in the United Kingdom. *Evidence Based Library and Information Practice*, *18*(4), 2–20. doi: 10.18438/eblip30407.

Hutson, J., Edele, S., Macdonald, L., Huffman, P., Messina, N., Pavone, M., ... Romero-Ghiretti, G. (2022). Open educational resources and institutional repositories: Roles, challenges, and opportunities for libraries. *Journal of Higher Education Theory and Practice*. *22*(18), 101–112. doi: 10.33423/jhetp.v22i18.5703.

Itasanmi, S. (2020). OER awareness and usage among open and distance learning students in South-Western Nigeria. *International Journal of Indonesian Education and Teaching*, *4*(2), 343–357. doi: 10.24071/ijiet.2020.040216.

Jong, M., Munnik, M. E., & Will, N. U. (2019). Innovation opportunities for academic libraries to support teaching through open education: A case study at TU Delft, The Netherlands. *New Review of Academic Librarianship*, *25*(2–4), 392–407. doi: 10.1080/13614533.2019.1621185.

Meinam, M., Meinam, T., Deepti, M., & Singh, Y. (2023). OER and MOOCs. *Indian Farming Digest*, *2*(6), 1–2.

OECD. (2007). *Giving knowledge for free: The emergence of open educational resources*. Paris: OECD Publishing. doi: 10.1787/9789264032125-en.

Ogunbodede, K., & Cocodia, B. (2023). Promoting the use of open educational resources by librarians in University Libraries in Nigeria. *The International Information & Library Review*, *55*(4), 329–338. doi: 10.1080/10572317.2023.2183556.

Onaifo, D. (2016). *Alternate academy: Investigating the use of open educational resources by students at the University of Lagos in Nigeria*. (PhD thesis). University of Western Ontario, Canada.

Osuigwe N. E. (2023). *Learning about open licensing*. Available at https://www.earlylearningresourcenetwork.org/taxonomy/term/376 (Accessed 24 December, 2023).

Osuigwe, N. E., & Levey, L. (2023) *The UNESCO recommendation and open knowledge: An overview for African librarians*. Available at https://web.aflia.net/wp-content/uploads/2023/08/UNESCO-OER-Recommendation-Overview-for-librarians-_230802_093332.pdf. (Accessed 24 December, 2023).

Percy, T., & Van Belle, J. P. (2012). Exploring the barriers and enablers to the use of open educational resources by university academics in Africa. In *IFIP International Conference on Open-Source Systems* (pp. 112–128). Heidelberg, Berlin: Springer.

Purkayastha, N., & Sinha, M. K. (2023). A study on design, development and implementation of MOOCs by faculty members in Central Universities of India: Problems and prospects. *Journal of Information and Knowledge*, *60*(5), 341–354. doi: 10.17821/srels/2023/v60i5/170945.

Salau, S. A., Olijhoek, T., & Oaiya, O. (2024). *Shaping quality assessment and open science practices in African Research*. Libsense. doi: 10.5281/zenodo.10710011.

Salau, S. A., Oyedum, G. U., Abifarin, F. P., Udoudoh, S. J., & Alhassan, J. A. (2020) Performance assessment of electronic theses and dissertations initiatives in Nigeria. *Digital Library Perspectives*, *36*(2), 127–148. doi: 10.1108/DLP-01-2020-0001.

Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. Thousand Oaks, CA: Sage.

TETFUND. (2020). *TETFUND guidelines for higher education book development* (2nd ed.). Nigeria: Tertiary Education Fund (TET fund).

UNESCO. (2002). *Open and distance learning. Trends, policy and strategy considerations*. Paris: UNESCO.

UNESCO. (2019). *UNESCO Recommendation on Open Educational Resources (OER): Supporting universal access to information through quality open learning materials*. Accessed from https://unesdoc.unesco.org/ark:/48223/pf0000383205.

Wiche, H., & Ogunbodede, K. F. (2021). Awareness and use of open educational resources by Library and Information Science Students of Ignatius Ajuru University of Education, Rivers State, Nigeria. *Library Philosophy and Practice, 5373*, 1–17.

Wiley, D. (2014). *The access compromise and the 5th R – Iterating Toward Openness*. Accessed from https://opencontent.org/blog/archives/3221.

Wordu, H., & Nwaizugbu, N. (2021). Open learning education resource in Nigeria: A review. *International Journal of Social Science and Education Research, 3*(2), 38–43.

Zaid, Y. A., & Alabi, A. O. (2020). Sustaining open educational resources (OER) initiatives in Nigerian Universities. *The Journal of Open, Distance and e-Learning, 36*(2), 1–18. doi: 10.1080/02680513.2020.1713738.

Zhou, G. S. (2022). Sustaining open educational resources (OER) initiatives in higher education: Practices, successes, and challenges. *(Doctoral dissertation)*. Columbia, USA: University of Missouri-Columbia. Accessed from https://mospace.umsystem.edu/xmlui/bitstream/handle/10355/94325/SeoGraceResearch.pdf?sequence=1&isAllowed=y.

Appendix

Interview Questions for OER Administrators/Librarians in Charge of E-resources

Implementation/management practices:

Which unit in the university is responsible for the implementation and management of OERs? (Probe for library, ITS, Research unit, committee). Who collects and uploads these contents? – lecturers, students or librarians? How frequent are they uploaded?

How did/do you collect OERs? (Do they submit to librarians, or do you collect from the departments or from distance learning centres).

Enabling factors for the adoption of OER projects in institutions/libraries:

In your opinion, what are the influencing factors responsible for the curation of OERs in your university? (Probe for NUC policy directive, Ranking metrics, Institutional buy-in, Library sensitisation, and library staff took it upon him/herself to upload these contents).

Does your library use OERs to augment its resources during accreditation? Are these resources online, offline, or both?

OER support services provided by the library/institution:

What are the techniques your library uses to promote awareness and use of OERs to support teaching, research, and learning? (Probe for external links to open resource databases, open courseware, offline books downloaded on workstations, etc.). Do you have a list /flyer containing these databases that you share with your users?

Do you train your faculty members and students on how to use these resources? If yes; are the trainings on access and usage for personal research or usage for content development of OERs or both? How frequent are these trainings?

Have you attended any training on management of OERs?

If yes, was it a personal development training on your own; University based (were you invited or you used personal relationship to attend the training?).

Challenges of managing OERs in libraries:

Challenges of collecting and managing OERs (Probe for low level of awareness on OERs, unwillingness to share knowledge generally or unwillingness to share knowledge specifically on repositories; infrastructure capacity; No incentive or value to lecturers (lecturers are already using OERs, the developed countries don't need our knowledge, difficulty combining the management of OERs due to time constraints for librarians, concerns about copyright, unfriendly software user interface, and inflexible features).