Assessing the Competencies and Skills of Academic Librarians in Nigeria for Scholarly Communication

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Abstract:

The changes in scholarly communication as a result of infusion of information technology in research work over the years imply that additional competencies and skills in scholarly communication are required for librarians to effectively support scholars in scholarly communication. This paper sought to identify the competencies and skills needed by academic librarians in Nigeria particularly in terms of their knowledge, understanding, and abilities in four main categories of the emerging scholarly communication activities, viz, scholarly publishing services, open access repository, copyright and open access, and assessing scholarly resources. This is with a view of making appropriate recommendations to address the needs identified. The study used a quantitative approach to data collection and analysis. A total of 80 academic librarians from the Nigerian Library Association online forum were used as sample population. The study discovered among others, that a high percentage of the academic librarians had knowledge of commercial and open access publishing platforms and open access policies and copyright. On the other hand, a low percentage had knowledge of funder mandate and requirement as well as bibliometric and altmetrics theory and practices. While more than half of the academic librarians in Nigeria had an understanding of current trends, issues in open access and assessment of scholarly resources, a low percentage had an understanding of data curation and management activities. Many academic librarians lack abilities to liaise with publishers on issues relating to archiving policies including embargo period and data management among others. The paper recommends the inclusions of courses in the Nigeria Library Schools curriculum that will build competencies and skills in scholarly communications. Nigerian

Library Association and Librarian Registration Council are also encouraged to organize workshops and conferences that will also build competencies and skills in scholarly communication.

Introduction

Conventional methods of scholarly communication before the infusion of digital information technology in research activities have been through article publication in print journals or books. However, with this development, scholarly information is increasingly being created, stored, preserved and accessed in digital format resulting in the change on how research is conducted and essentially disseminated. Supporting this assertion Aamot (2018) stated that scholarly communication system is in a state of rapid flux and evolution, driven by new information technologies, low marginal costs of online distribution, and changing reader expectations. The changes in scholarly communication imply that librarians must acquire the requisite competencies and skills to effectively play their roles in scholarly communication. Scholarly communication can be defined as "the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community and preserved for future use. The system includes both formal means of communication, such as publication in peer-reviewed journals, and informal channels, such as electronic listservs" (Association of College & Research Libraries, 2003). In order to effectively support scholars in the emerging scholarly communication system, librarians must acquire the requisite competencies and skills in scholarly communication.

The Role of Librarians in Scholarly Communication

Librarians have always supported scholarly communication by acquiring and facilitating access to appropriate information resources in the library. With the evolution and infusion of digital information technology into the library, librarians are now faced with additional roles to support scholarly communication. According to Rosenblum (2008), the growth of the Internet and digital technology has caused a dramatic and rapid change in how scholarship is created and communicated. Consequently, librarians have reassessed their own roles in supporting the evolving needs and behaviours of their users, and also undertaken a range of new initiatives in the scholarly communication process. Some of the additional responsibilities include: publishing of online journals, deployment of Institutional Repository, facilitating access to open access journals on their website, creating and maintaining scholarly communication social media sites, giving support for copyright and Open Access, impacting knowledge on Creative Commons Licensing, providing information about publisher's policies relating to self-archiving, and helping scholars to guarantee their intellectual property rights when publishing.

It has been argued that these additional responsibilities are not the conventional competencies and skills acquired from the library schools, hence librarians must acquire these additional competence and skills. Without the requisite competencies and skills, librarians will be unable to support scholars in the emerging scholarly communication process. This paper therefore sought to identify the gaps in competencies and skills (knowledge, understanding and ability) of academic librarians in Nigeria with a view to making appropriate recommendations to fill the gaps. To achieve the objectives this study poses the following research questions to respondents:

1. What competencies and skills in scholarly publishing services do you have to support scholarly communication process?
2. What competencies and skills on open access repository services do you have to support scholarly communication process?
3. What competencies and skills in copyright and Open Access advice do you have to support scholarly communication process?
4. What competencies and skills in assessment of scholarly resources do you have to support scholarly communication process?

Literature Review

The State of Scholarly Communication in Nigeria

Advocacy for the adoption of Open Access Initiatives in Nigeria can be attributed to the series of advocacy workshops organized by Electronic Information for Libraries (eIFL) in collaboration with the Department of Library and Information Science, ABU, Zaria and the Nigerian University Libraries Consortium (NULIB) in 2008 and 2009 (Gbaje, 2010). The spin-off of these advocacy workshops was the establishment of open access journals as well as deployment of Institutional repository by many Nigerian Universities. Supporting this assertion, Ocholla and Ocholla (2007) maintain that African scholars were behind the rest of the world in scholarly productivity, as the authors with scholarly work had to pay huge sums for their works to be made visible through publications in journals. The awareness and adoption of Open access improved the visibility of scholars in Nigeria as scholars are now able to publish their works in open access journals and upload onto institutional repositories (IR). Gbaje (2010) posited that the disparity in the high number of articles published in closed journals in relation to open access journals could be linked to the cost of publishing in Open Access Journals, thereby forcing many scholars to publish in closed journals that offer free publications. Ezema and Okafor (2016) identified institutions websites, face-to-face communication, seminars and workshops as the major advocacy strategies for scholarly communication in Nigeria. Similarly, Oguche (2018) looked at the state of scholarly communications in Nigeria and asserted that "Nigeria currently had 20 Institutional Repositories listed in OPENDOAR all of which are deployed and maintained by the library. Gbaje and Mohammed (2017) examined the long-term accessibility and re-use of Institutional repository contents of some selected academic institutions in Nigeria and the findings revealed that none of the academic institutions has put in place any strategy to ensure the long-term preservation or accessibilities of the contents of their Institutional Repository.

Competencies and Skills for Scholarly Communication

Competence has been defined as the interplay of knowledge, understanding, skills and attitudes required to do a job effectively from the point of view of both the performer and the observer (Murphy, 1991). Supporting this assertion, the European e-Competence Framework (e-CF, 2014) defined competence as the demonstrated ability to apply knowledge, skills and attitudes to achieve observable results. On the other hand, skills are precise and definite abilities, either hard technical or soft. Calarco et. al. (2016) opined that additional competencies and skills will be required for library activities in scholarly communication and open access in the following areas:

a. **Scholarly Publishing Services**

   Librarians have traditionally assisted scholars at the beginning of their research work, especially with locating and delivery of information sources. However, recent studies

have revealed that librarians are now playing a role at the end of the research work, by providing services that support scholarly publishing (Perry et al., 2011; Crow et al., 2012; McIntyre et al., 2013; Armstrong, 2014 and Bains, 2017). Scholarly publishing services are provided via local or hosted digital publishing platforms or digital repository for journals, books, conference proceedings, working papers and other scholarly work emanating from their scholars. These services further include provision for storage, description, access, long-term preservation and hosting of electronic journals. According to the Association of College & Research Libraries (2016), core competencies in scholarly publication services comprise a subset of the following:

1. Knowledge of Commercial and open access publishing platforms for instance publishing workflows and operational models, editorial processes, Digital Object Identifiers (DOI), International Standard Serial Numbers (ISBN), persistent URL and citation options, Funder mandates and requirements, Metadata standards, and discovery tools;
2. Understanding of scholarly publishing services in the current trends and issues in OA and scholarly communication such as data curation and preservation practices; and licensing issues pertaining to open access and
3. Ability to manage OA publishing software services, for example Public Knowledge Project's Open Journal System (OJS), Open Monograph Press (OMP), Working with in-house technology experts to develop capacity and technology infrastructure that are required.

b. **Open Access Repository Services**

Librarians deployed Open access repository services as part of library activities that support scholarly communication. Repositories are used to house locally created digital contents including new digital objects or digitized versions for their management and dissemination (Cliff Lynch, 2003; Kamraninia and Abrizah, 2010). According to Armstrong (2014) and Gbaje and Mohammed (2017), additional open access repository services provided by the library include creating quality metadata, records for their full-text documents, and guaranteeing long-term access to these items. Similarly, Calarco et al., (2016) listed the subset of core competencies in open access repository services as follows:

1. Knowledge of OA policies and requirements which includes repository software, metadata standards, discovery tools, data formats, database design, and data management tools.
2. Ability to manage repository platform and update software over time which requires working with researchers on deposit of research outputs into the repository, liaising with publishers on issues relating to archiving policies including embargo periods and where applicable, article processing charges and
3. Understanding of current trends and issues in open access and scholarly communication; copyright and licensing issues pertaining to scholarly content; and data curation and preservation practices

c. **Copyright and Open Access Advice**

Assisting scholars on copyright related issues, publishing agreements and open access policies are additional roles played by librarians in the scholarly communication process. Nilsson (2016) posited that librarians in the emerging scholarly communication process must help scholars to understand and retain their rights and increasing visibility of their work. Competencies and skills on copyright and open access advice are therefore pertinent in the supportive role of librarians in scholarly

communication. In their article Calarco et al., (2016) listed the core competencies in copyright and open access to include the following;

1. Knowledge of copyright and licensing issues pertaining to scholarly content, including traditional copyright as well as creative commons and other OA licenses, open access policies and requirements, and current trends and issues in open access and scholarly communication;
2. Understanding of traditional scholarly publishing system and
3. Ability to raise awareness of OA, such as practical questions such as financing and policy adherence, giving advice to faculty and graduate students on alternatives to transferring copyright to their original scholarly works

   d. Assessment of Scholarly Resources

Aside from assessing scholarly resources, many libraries now provide a link between the scholarship created by their researchers and the need of their institutions to demonstrate the value and impact of that scholarship (Tenopir, 2018). Scholars have offered various views on the roles of librarians in scholarly communication some of the scholars argued that librarians provide consultation to scholars on scholarly resource assessment and metrics, including traditional bibliometrics as well as new and emerging metrics. A subset of the core competencies and skills for assessment of scholarly resource as listed by Joint Task Force on Librarians' Competencies in Support of E-Research and Scholarly Communication has been listed below:
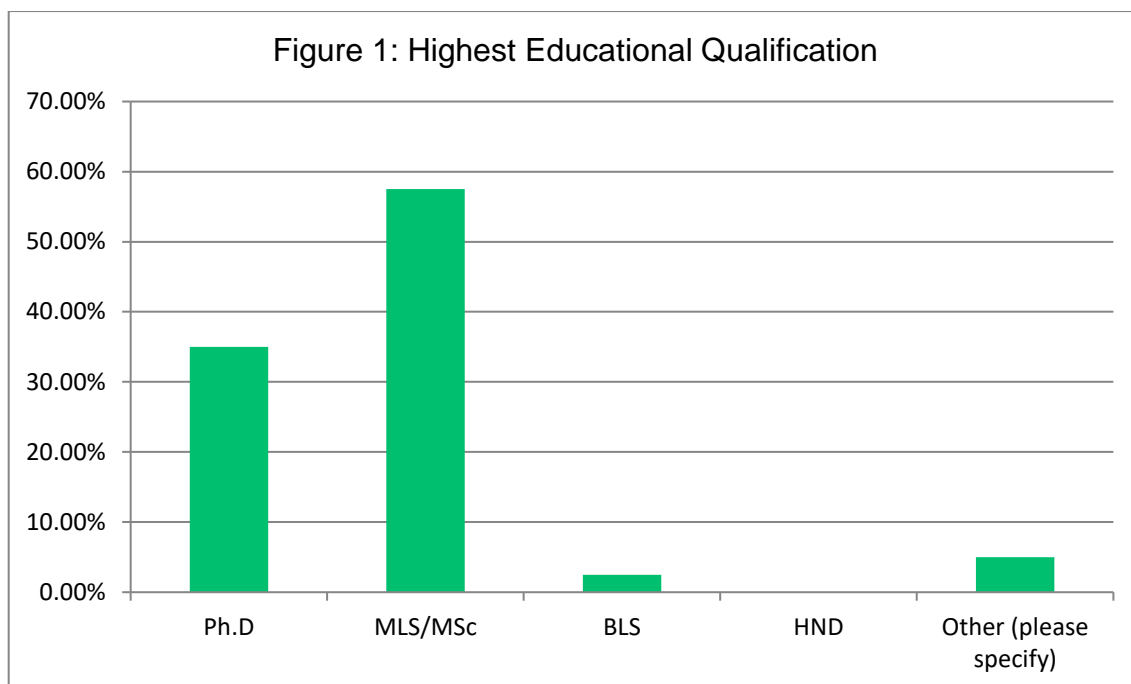
1. Knowledge of assessment criteria for journals and other resources, bibliometrics and altmetrics theory and practice;
2. understanding of faculty promotion and tenure policies and procedures, and Institutional assessment/planning interests in scholarly output and
3. ability to provide support to faculty in assessing journals and other scholarly resources; and offer advice to library acquisition departments on quality indicators.

Methodology

The core competencies and skills requirement outlined by Calarco et al (2016) was adapted and used as a framework for drafting the online questionnaire designed for this study. The questionnaire was designed with the use of survey monkey, invites to the questionnaire were sent to the Nigerian Library Association online forum mailing group requesting responses solely from academic librarians. The data collection from the academic librarians within the mailing group ran for a period of 4 weeks (1month) within which reminders were sent out only weekly bases. At the end of the four weeks, a total of 81 questionnaires were duly filled and submitted. The researchers ensured that only questionnaires filled by academic librarians were used for the data analysis. Hence one (1) submission was rejected because the respondent was not an academic librarian. The study therefore analysed responses collected from 80 academic librarians.

Findings and Discussion

Out of the 80 academic librarians who participated in this study, 52.50 percent are staff of Federal Government of Nigeria owned University, while 25.00 and 22.50 percent are employees of State and Privately owned Universities respectively. The highest educational qualification of most respondents was a Masters Degree in Library and Information Science while only about 2.50 percent had a Bachelor's degree in Library Science. See figure 1

Figure 1: Highest Educational Qualification

Scholarly Publishing Services

Data collected from the respondents for scholarly publishing services were categorized into knowledge, understanding and ability in scholarly publishing services as shown in table 1,2 and figure 2.
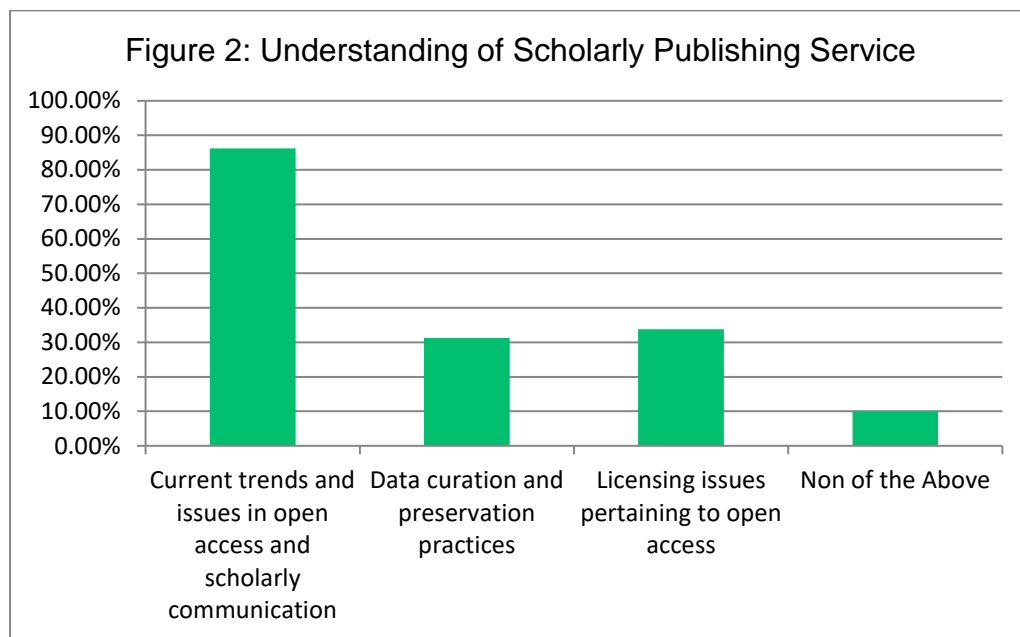
Table 1: Knowledge of Scholarly Publishing Services

Activities	Responses	
	Frequency	Percentage
Commercial and open access publishing platforms	61	76.25%
Publishing workflows and operational models	20	25.00%
Editorial processes	40	50.00%
Standards: Digital Object Identifiers (DOI), International	42	52.50%
Standard Serial Numbers (ISBN), International Standard		
Book Numbers (ISBN), persistent URL and citation options, such as OpenURL and CNRI Handle		
Funder mandates and requirements	14	17.50%
Metadata standards, and discovery tools	25	31.25%
None of the Above	9	11.25%

N=80

Most of the respondents (76.25%) indicated that they had knowledge of commercial and open access publishing platforms while 52.50% and 50% had knowledge on editorial processes and standards respectively. The data also revealed that 11.25% of the respondents did not have any

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knowledge of scholarly publishing while 17.50% indicated that they had knowledge of funder mandates and requirements. The small percentage of respondents with knowledge of funder mandates and requirements implies that academic librarians in Nigeria will not be in position to provide scholars with information that will support publication in journals under the Gold Open Access model or where to publish and ensure the widest reach and impact of scholarship. This is in agreement with the finding of Gbaje (2010) who stated that the cost of publishing in open access journals has been a major hindrance to scholars publishing their work under the Gold Open Access model.

Figure 2: Understanding of Scholarly Publishing Service

N = 80

Figure 2 showed that 86.25% of respondents had understanding of current trends and issues in open access and scholarly communication as against the 10% and 31.25% of the respondents who had no understanding of scholarly publishing services and data curation and preservation practices respectively. The implication of low percentage of respondents without an understanding of scholarly publishing activities and data curation and preservation activities is that very few academic libraries will be able to preserve scholarly work of the researchers for long-term accessibility and re-use. This is in agreement with the finding of Gbaje and Mohammed (2017) that the few libraries that have deployed Institutional repository are unable to carry out any digital preservation activities on their contents.
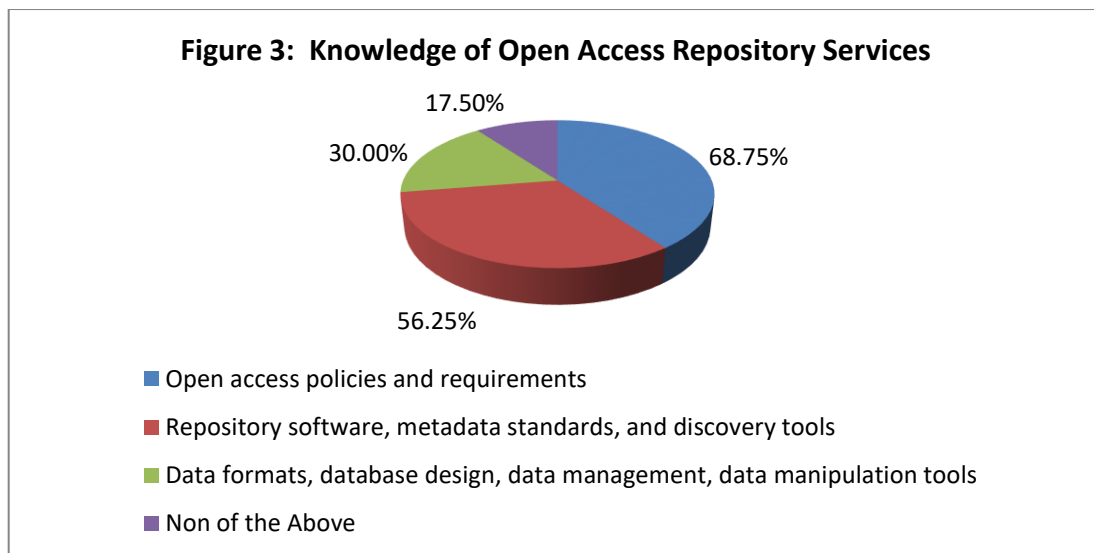
Table 3: Abilities in Scholarly Publishing Services

Activities	Responses	
	Freq.	%
Manage OA publishing software services, such as Public Knowledge Project's Open Journal System (OJS) and Open Monograph Press (OMP)	20	25.00%
Work with in-house IT expert to develop capacity and infrastructure	38	47.50%
None of the Above	35	43.75%

Working with in-house Information Technology expert to develop capacity and infrastructure was one of the major activities 47.50% of the respondents indicated they had the ability to carry out. On the other hand 43.75% of the respondents indicated that they neither had the ability to work with in-house Information technology staff to develop capacity and infrastructure non possess the ability to manage OA publishing software services. This implies that a high percentage of academic librarians in Nigeria are unable to play their roles in hosting open access journals in the library in support of scholarly communication. This is in agreement with Oguche (2018) who was of the view that there are currently 20 functional Institutional Repositories in Nigeria which is low considering the total number of Universities in Nigeria (41 Federal, 47 State and 74 private Universities).

Open Access Repository Services

The responses collected on competencies and skills of academic librarians in Nigeria under the activities of Open access repository services were categorised into knowledge of Open Access repository services, understanding of Open Access repository and abilities in open access repository services

Figure 3: Knowledge of Open Access Repository Services

- Open access policies and requirements
- Repository software, metadata standards, and discovery tools
- Data formats, database design, data management, data manipulation tools
- Non of the Above

N= 80

The responses collected from the sample population as shown in figure 3 revealed that 68.75% of the respondents had knowledge of open access policies and requirements. This can be attributed to the various advocacy activities carried out in Nigeria over the last decade as posited by (Gbaje 2010; Ezema and Okafor 2016; and Oguche 2018). Respondents who had no knowledge of any open access repository services activities and data management were 16.46% and 30.38% respectively. The implication is that very few academic librarians have the skills to support scholars in data management which is a growing need in scholarly communication system.

The understanding of open access repository service by academic librarians is pertinent to effectively support scholarly communication activities. Hence, the researchers sought to find out from the respondents if they had an understanding of open access repository services as indicated in table 4.
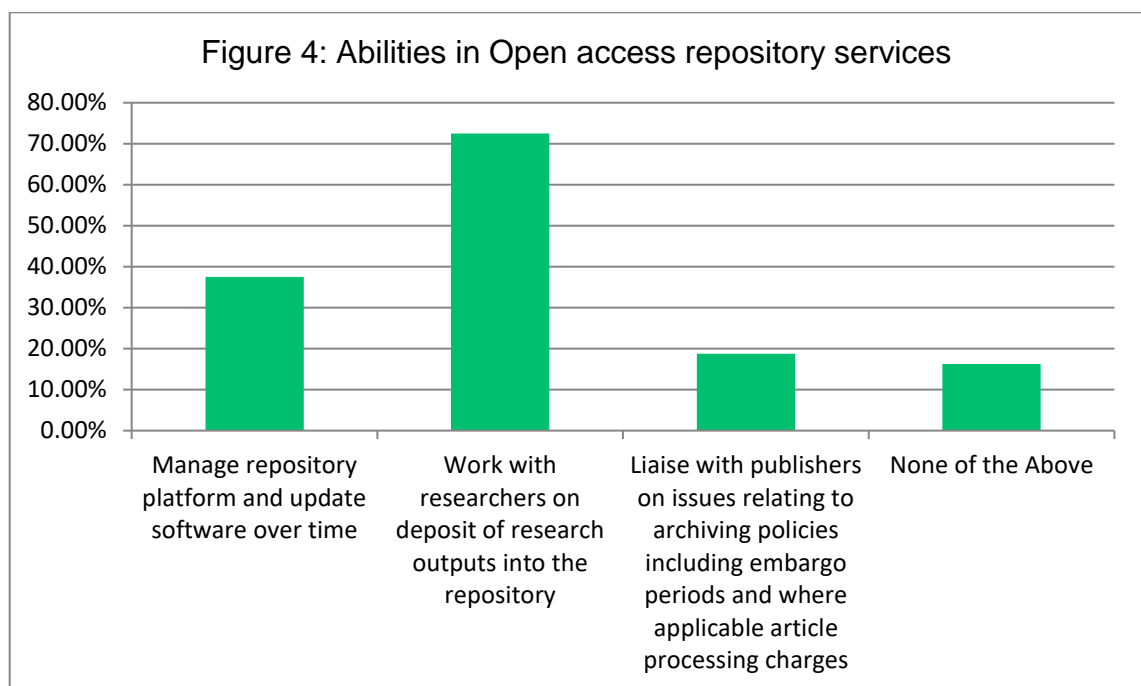
Table 4: Understanding of Open Access Repository Services

Activities	Responses	
	Freq	%
Current trends and issues in open access and scholarly communication	59	75.64%
Copyright and licensing issues pertaining to scholarly content	41	52.56%
Data curation and preservation practices	24	30.77%
None of the Above	9	11.25%

N=80

The responses indicated that 75.64% of the respondents had an understanding of current trends and issues in open access and scholarly communication, while very few respondents (11.25%) had no understanding of any of the activities that relate to the understanding of open access repository services as enumerated in table 5. Furthermore, only 30.77% of the respondents had an understanding of data curation and preservation practices as it relates to open access repository services.

Abilities in Open Access repository services support activities that include wider dissemination of information and hosting of scholarly information. Data collected revealed that 72.50% of the sampled academic librarians had the ability to work with researchers on how to deposit their research output into repository.

Figure 4: Abilities in Open access repository services

Respondents who indicated that they do not have any form of ability in open access repository services were 16.25% while only 18.75% of the respondents indicated that they had the ability to liaise with publishers on issues relating to archiving policies including embargo periods. The implication of this finding is that either many copyrighted work will not be deposited in Institutional repository or they will be deposited in violation of copyright agreements.

Copyright and Open Access:
Academic librarians need a solid foundation in basic copyright knowledge, as well as a wider understanding of scholarly communication and publishing. Poor knowledge and understanding

of copyright can lead to noncompliance of copyright law and may have a negative impact on scholarly communication. The study therefore sought to identify the percentage of respondents that had the knowledge on copyright and open access activities in support of scholarly communications. The results are as shown in Table 5
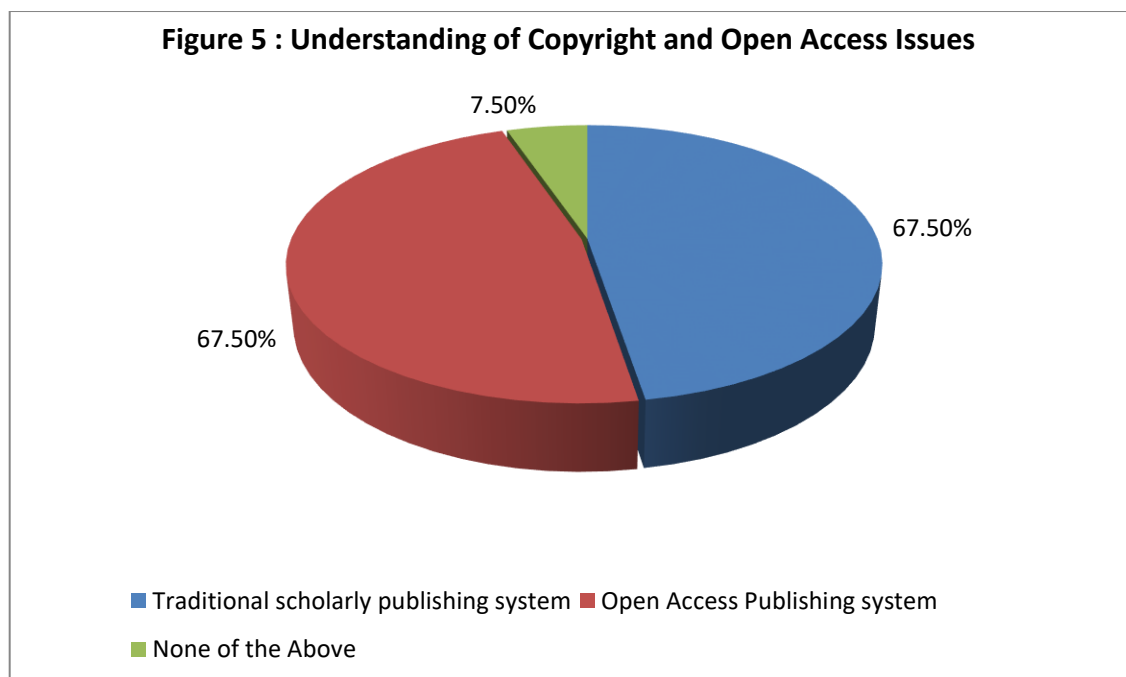
Table 5: Knowledge on Copyright and Open Access

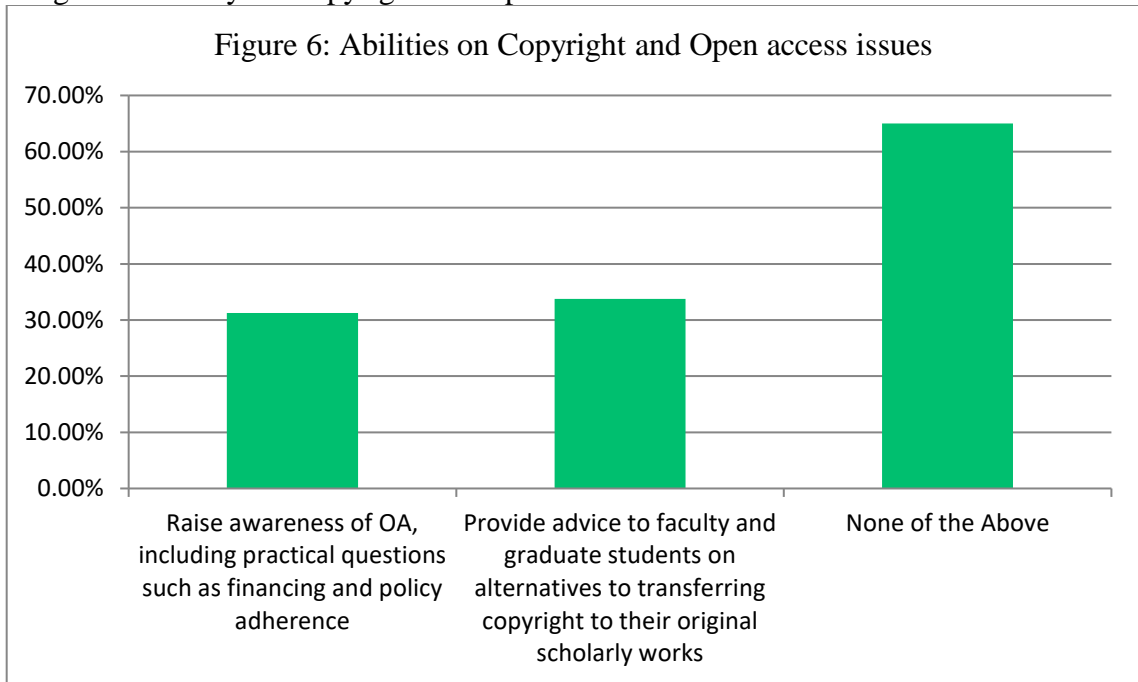| Activities	Response	
	Freq	%
Copyright and licensing issues pertaining to scholarly content, including tradition copyright as well as creative commons and other OA licenses	51	63.75%
Open access policies and requirements	71	88.75%
Current trends and issues in open access and scholarly communication	20	25.00%
None of the Above	7	8.75%

N = 80

The data collected from the respondents reveals that 88.75% of the respondents had knowledge of copyright and open access with only about 8.75% respondents without any knowledge fn copyright and open access activities listed in table 5. Furthermore a small percentage (25%) had knowledge of the current trends and issues in open access and scholarly communication. This could be as a result of the fact that no workshops or conferences that focus on the current trend in open access and scholarly communication has been organized in Nigeria within the last few years.

The data collected also showed that high percentage of respondents (67.5%) had an understanding of traditional publishing system as well as open access publishing systems each. This is not surprising as many of them have been involved in traditional and open access publishing.

Figure 5 : Understanding of Copyright and Open Access Issues

7.50%

67.50%

67.50%

■ Traditional scholarly publishing system ■ Open Access Publishing system
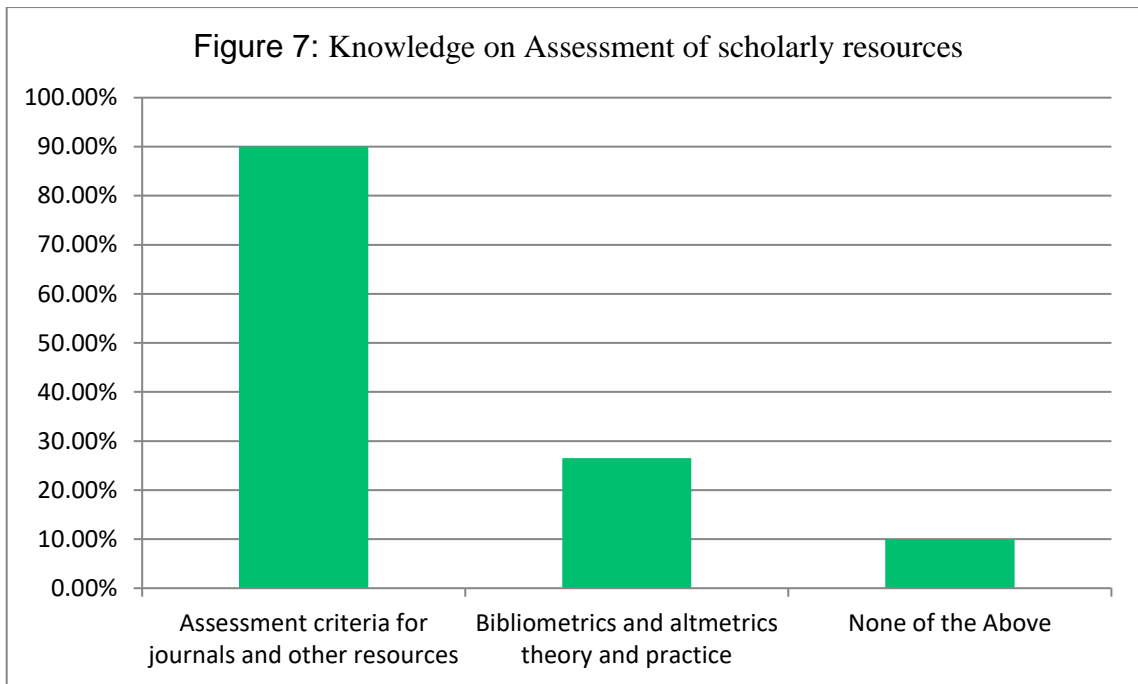■ None of the Above

Majority of the respondents (65%) indicated that they neither have the abilities to raise awareness of Open Access including providing answers to practical questions relating to financing OA and policy adherence nor are they in the position to provide advice to researchers and graduate students on alternatives to transferring copyright to their original scholarly works. These findings imply that many librarians are unable to support scholars to retain or transfer the copyright to their work; hence many scholars are unable to deposit their copyrighted works or deposit their works in violation of the copyright agreement.

Figure 3: Ability on Copyright and Open Access issues

Figure 6: Abilities on Copyright and Open access issues

Assessing Scholarly Resources

As one of the emerging roles librarians play in the support of scholars in scholarly communication the researchers sought to identify the percentage of sampled academic librarians that had knowledge, understanding and ability to assess scholarly resources. Figure 7 shows that 90% of the respondents had the knowledge of assessment criteria for journals and other resources, while only 26.5% of the respondents had knowledge of bibliometric and altmetrics theory and practices. In addition, 10.0% indicated that they had no knowledge of both See figure 7.

Figure 7: Knowledge on Assessment of scholarly resources

The small percentage of sampled academic librarians with knowlegde of bibliometrics and altmetrics implies that they will be unable to showcase the impact their scholars have in their area of research as well show the value of their research to funding bodies.

More than half of the sampled academic librarians (62%) had understanding of assessment of scholarly resources particularly Institutional assessment/planning interests in scholarly output while 55% had an understanding of faculty promotion, tenure policies and procedure. This is not surprising because all academic librarians are tenure staff whose promotion is also dependent on their scholarly publications. Only a small percentage of just 17.72% had no understanding of assessment of scholarly resources as shown in figure 8.
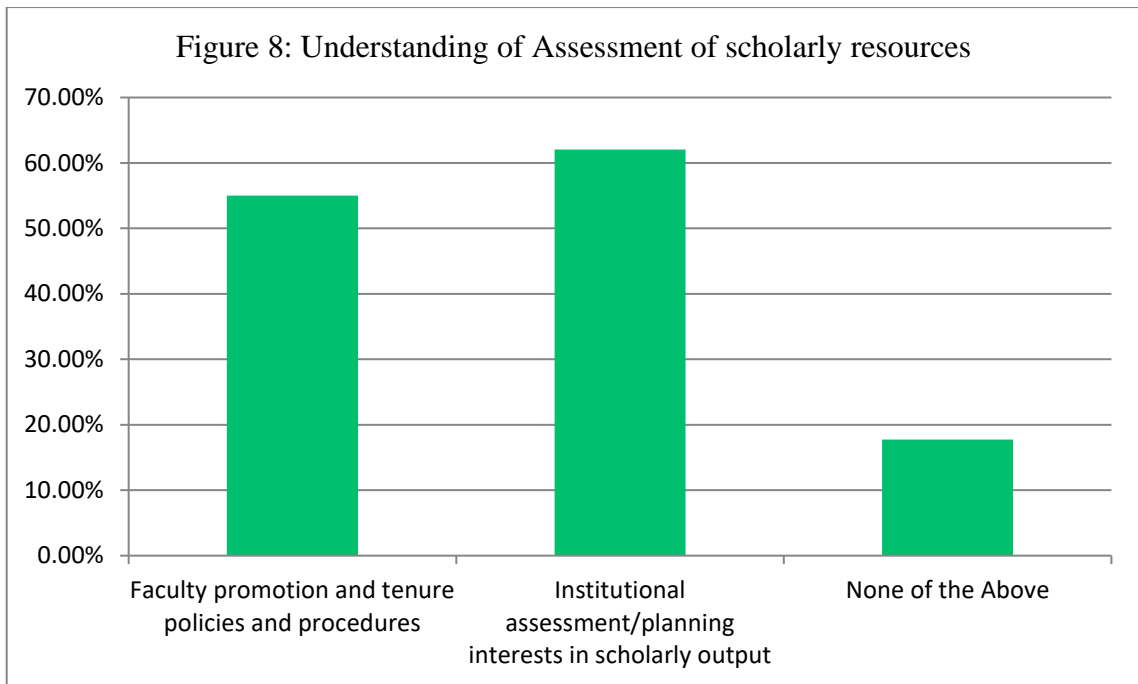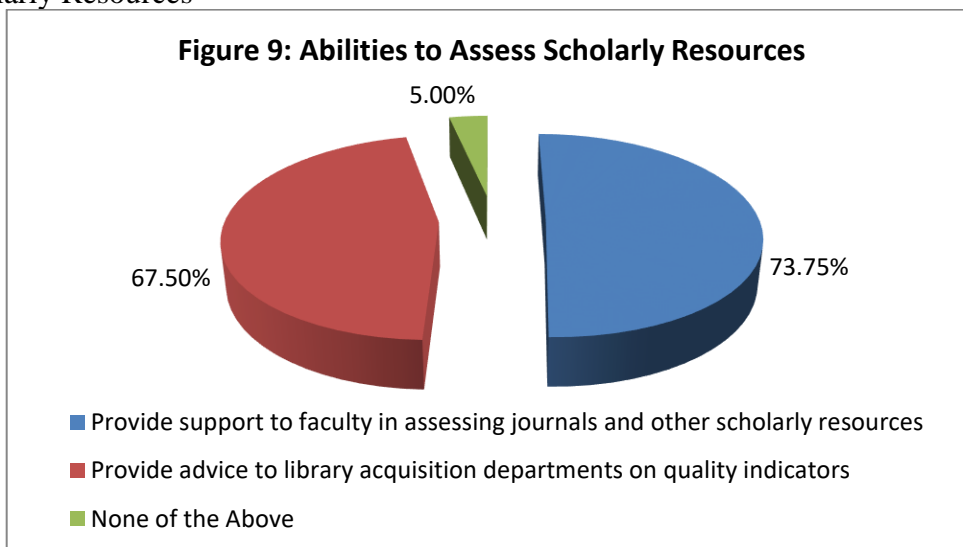
Figure 8: Understanding of Assessment of scholarly resources

Figure 9 shows the responses of sampled academic librarians on their abilities to Assess Scholarly Resources

Figure 9: Abilities to Assess Scholarly Resources

The percentage of the sampled academic librarians with the ability to assess scholarly resources was above average. Specifically, 73.75% of the sampled academic librarians indicated they had the ability to provide support to faculty in assessing journals and other scholarly resources. In addition, 67.50% also indicated that they had the ability to provide advice to library acquisition departments on quality indicators. Only 5% indicated they had no ability to assess scholarly resources.

Summary of Major Findings
A high percentage of the sampled academics librarians indicated that they had knowledge of commercial and open access publishing platforms, and understanding of the current trends and issues in open access and scholarly communication. Unfortunately, many of them still lack ability to manage open access publishing software and/or consult with their institutional ICT

staff to develop capacity and infrastructure for scholarly publishing services. Again many academic librarians in Nigeria do not have the knowledge of funder mandate and requirement which has negatively affected their role in supporting scholars to secure funds for their research work and scholarly publications. The high percentage of sampled academic librarians who indicated they do not have understanding of data curation and preservation activities .is of great concern, as this could affect the long-term accessibility of scholarly work in Nigeria

Many of the sample academic librarians had knowledge of open access policies and requirements and an understanding of current trends, issues in open access, as well as the ability to work with researchers on how to deposit their research output into repository. This could be attributed to the various advocacy activities carried out in Nigeria over the last decade. Only a small percentage of the academic librarians had the competencies and skills to support scholars in data management which is a growing need in scholarly communication system. Similarly, a small percentage of academic librarians had the ability to liaise with publishers on issues relating to archiving policies including embargo periods.

A high percentage of academic librarians had knowledge of copyright and open access as well as an understanding of traditional and open access publishing system. However, a high percentage does not have the abilities to raise awareness of Open Access and provide advice to researchers and graduate students an alternative to transferring copyright. Many scholars are unable to deposit their copyrighted works or deposit their works in violation of the copyright agreement.

More than half of the sample academic librarians had understanding of assessment of scholarly resources and abilities to assess scholarly resources while a very high percentage had the knowledge of assessment criteria for journals and other resources. Nevertheless, high percentage of the sample academic librarians had no knowledge of bibliometric and altmetrics theory and practices.

Conclusion and Recommendations
For academic librarians in Nigeria to effectively play their roles in scholarly communication they must acquire additional competencies and skills in scholarly communication particularly in terms of their knowledge, understanding and abilities in scholarly publishing services; open access repository; copyright and open access; and assessing scholarly resources.

From the findings and conclusion of this study, it is evident that Nigerian Library schools need to introduce some courses in the curriculum that will enable their graduates build additional competencies and skills in the emerging scholarly communication process. Librarian Registration Council of Nigeria and Nigerian Library Association, as a matter of urgency, need to put in place professional development programmes such as workshops and conferences that will build competencies and skills in the following areas:
 a. Deployment and maintenance of open access publishing software;
 b. Identification of research funders who support open access and their mandates;
 c. Data curation and preservation activities for Institutional Repositories;
 d. Research data management;
 e. Open access repository archiving policies;
 f. Copyright Issues such as retaining and transfer of copyrights; and
 g. Bibliometric and altmetrics theory and practices.

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