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# **Fostering open access through online academic publishing: the role of academic libraries in Nigeria.**

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**Abstract**

The paper explored the meaning of open access and online academic publishing. In teaching and learning open access provides wide range barrier free information to teachers and learners. The paper discussed the various open access journals, online academic publishing and prominent open access publishers. It explained the role of open access through online academic publishing and the roles of academic libraries in promoting open access. The paper recommended among others that academic library resources should be digitized to allow for open accesses and faculties should publish online in the digital age for open access.

**Key words: Open access, online academic publishing, Academic libraries, Nigeria.**

## Introduction

According to Budapest Open Access Initiative (2002) as cited by Kassahun and Nsala (2015), the basic definition of Open Access is the free availability of information resource on the public internet, permitting any users to read, download, copy, distribute, print, search or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal or technical barriers other than those inseparable from gaining access to the internet itself.

As far as open access is concerned, free access to literature was all along there even in ancient times when there were no legal restrictions in having access to literature. But with the invention in printing technologies, price factor started to be involved in accessing knowledge. Slowly and gradually, accessibility to available literature, especially research literature, turned costly to costlier. Open access came into existence because of the constant rise in the price of scholarly journals in the field of science, technology and medicine. As noted earlier, the first scholarly journal began only in the third quarter of the 17th century, grew in 20<sup>th</sup> Century and captured the whole market by the end of the 20<sup>th</sup> century. In the last two quarters of the 20<sup>th</sup> century, a huge price hike was observed that worried not only the institutions subscribing these journals, but also the authors of the articles publishing in these journals. It brought the scholars around the world together against serial pricing or serial crisis. This anger and worry among scholars and scientists marked the launch of 'newsletter on serial pricing issues' in 1989 to discuss the issue and raise their voice against price rise. Several editors of commercial journals left the editorship of their journals; they also wrote an open letter to the publisher to make their articles freely available but nothing could change the mind and policies of commercial publishers (Agrawal, 2014).

Academic publishing is the subfield of publishing which distributes academic research and scholarship. Academic publishing is undergoing major changes, as it makes the transition from the print to the electronic format (online publishing). Most academic work is published in academic journal article, book or thesis form. Most scientific and scholarly journals, and many academic and scholarly books, though not all, are based on some form of peer review or editorial refereeing to qualify texts for publication. Peer review quality and selectivity standards vary greatly from journal to journal, publisher to publisher, and field to field. Most

established academic disciplines have their own journals and other outlets for publication. In open access publishing, a journal article is made available free for all on the web by the publisher at the time of publication. Both open and closed journals are sometimes funded by the author paying an article processing charge, thereby shifting some fees from the reader to the researcher or their funder. Many open or closed journals fund their operations without such fees. The internet has facilitated open access self-archiving, in which authors themselves make a copy of their published articles available free for all on the web (Wikipedia, 2020).

### **Open Access Journals**

According to Agrawal (2014), the accumulation of the links of open access journal, researcher found that an open access journal is available almost for every subject. Instead of subscribing to a number of journals, the library may provide access to open access journals available on the Web. Shidi, Nwachukwu and Ode (2020) expressed that there are countless benefits derived by researchers, educational institutions, businesses, the public, and research funders from open access journals. The benefits range from increased visibility, readership and impact of authors' works to increased competitiveness of academic institutions and capacity to meet the criteria for the institutions' rating. Other benefits are stimulation of new ideas, new services, new products, creation of better educated populace and encouragement of greater interaction with results of funded research. The introduction of open access journals has affected the academic world significantly both globally and locally including Nigeria. Through it, great volumes of information materials have been released and made available to researchers worldwide which has enhanced research activities. To gather these journals a number of directories of open access journals such as DOAJ, Open-J-Gate, and Public Library of Science etc have been referred. However, broadly these journals could be categorized under following subjects:

**Medical Science:** Medical science is dominating open access world by having almost 18% open access journals in the subject. Medical science is a subject which is directly related to every single human being on the earth. Having maximum open access journals in medical science eased the research in medical and health sciences.

**Education:** Open access journals are also flooded in education. After medical science, education has the large number of open access journals published in several languages.

**Life Science:** life science is another area where a number of open access journals are available. In life science, user may find journals dealing with biology, zoology, biochemistry, and biotechnology etc.

**Chemistry:** Chemistry also established as an attractive subject among open access publishers. More than 100 English language open access journals are available in various aspect of chemistry.

**Literature and Linguistics:** One may find a wide range of open access journals in literature and linguistics. Researchers working in this area may not get affected due to unavailability of subscription based scholarly journals in their libraries as this area is covered hugely by open access publishers.

**Others:** As discussed earlier, open access journals are available on almost every subject. Subjects not discussed above also have good number of open access journals available online. Computer science, Engineering, Philosophy, History, Economics, Management, Generalia, Agriculture, Library and Information Science are the subjects that have more than 100 open access journals each in English language. Other subjects of social sciences, humanities, science, technology, arts, etc, have 10 to 100 open access journals in English language. However there is a need of open access journals in areas of naval science, nuclear physics, acoustics, environmental engineering, and hydraulic engineering. Today more than 10,000 open access journals of various subjects in a number of languages are available. In addition to this, there are various encyclopedias and books available without any restriction (Agrawal, 2014).

### **Online Academic Publishing**

The process of academic publishing is divided into two distinct phases. The process of peer review is organized by the journal editor and is complete when the content of the article, together with any associated images or figures, are accepted for publication. The peer review process is increasingly managed online, through the use of proprietary systems, or commercial software packages such as ScholarOne, ManuscriptCentral, Aries Editorial Manager, and EJournalPress. Once peer review has been completed, the original author(s) of the article will modify their submission in line with the reviewers' comments, and this is repeated until the editor is satisfied. (Agrawal, 2014). Some journals, particularly newer ones, are now published in electronic form only. Paper journals are now generally made available in electronic form as well, both to individual subscribers, and to libraries. Almost always these electronic versions are available to

subscribers immediately upon publication of the paper version, or even before; sometimes they are also made available to non-subscribers, either immediately (by open access journals) or after an embargo of anywhere from two to twenty-four months or more, in order to protect against loss of subscriptions. The production process, controlled by a production editor or publisher, then takes an article through copy editing, typesetting, inclusion in a specific issue of a journal, and then printing and online publication. Copy editing seeks to ensure that an article conforms to the journal's house style, that all of the referencing and labelling is correct, and that there are no spelling or grammatical errors. Typesetting deals with the appearance of the article—layouts, fonts, headings etc., both for print and online publication (Wikipedia, 2020).

In much of the twentieth century, such articles were photographed for printing into proceedings and journals, and this stage were known as "camera ready" copy. With modern digital submission in formats such as PDF, this photographing step is no longer necessary, though the term is still sometimes used. The author will review and correct proofs at one or more stages in the production process. The proof correction cycle has historically been labour-intensive as handwritten comments by authors and editors are manually transcribed by a proof reader onto a clean version of the proof. In recent years, this process has been streamlined by the introduction of e-annotations in Microsoft Word, Adobe Acrobat, and other program, but it still remains a time-consuming and error-prone process (New World Encyclopedia, 2020).

According to Dondio, Casnici, Grimaldo, Gilbert and Squazzoni (2019), in a more recent article published in the *Journal of Informetrics*, the term “invisible hand” of peer review to describe how the process is a connection between knowledgeable scholars in the first place. We mapped the connections between all scholars who submitted and/or reviewed manuscripts for a multidisciplinary journal strictly following double blind peer review. The idea was to measure respective positions in the network structure of the community before and after they were matched by double blind peer review. We found that referees tended to recommend more positively submissions by authors who were within three steps in their collaboration network before they were paired by the journal editor. We found that when these closest referees were demanding, i.e., requested major revisions, the manuscripts were cited more when eventually published.

## **Prominent Open Access Publishers**

### **Biomed Central**

Poynder, (2005) in Agrawal (2014) analyzed that BioMed Central is a commercial publisher, but focused in publishing open access journals in the field of Science, Technology and Medicine (STM). It was developed in 1998 and launched in 2000 by Vitek Tracz. He was a person involved in commercial publication who developed medicine and science journals and once they became popular, he sold them to big commercial publishers like Elsevier. But during 1990s situation around the world experienced a drastic change with a huge opposition of commercial publishers by open access advocates due to unaffordable price rise. Moreover, emergence of Internet and Web also paved a way to remove the costs of publishing. Vitek Tracz was also convinced that such an emergence of internet and Web will make it difficult for the commercial publisher to charge high price for their journals. Evaluating the situation, Vitek Tracz started a commercial but open access publication BioMed Central (BMC). In 2001 BMC announced launch of initial list of journals. BMC did not charge readers to read an article of any of its journal but it charged the author to publish their articles as publication fees or article processing fees that was \$500. The BioMed Central experienced many ups and downs due to changes in its publication fees and some times editors of BioMed Journals rebelled against its price increase. In 2008 BioMed Central with approximately 180 journals was acquired by Springer, one of the major commercial publishers. It posed a threat to millions of scholars to lose the open access to BioMed Central, but, Springer promised to provide open access to its journals. Since then the number of open access journals published by Biomed Central has constantly increased. As on September 2012, it was providing 220 open access journals that included journal published by Springer Open and Chemistry Central (Agrawal, 2014).

### **Public Library of Science (PLOS)**

Public Library of Science, (2004) as cited by Agrawal (2014) asserted that Public Library of Science (PLOS) was established as a result of the open letter to the publisher, as discussed earlier, in 2000. The goal of PLoS is to “provide ways to overcome unnecessary barriers to immediate availability, access, and use of research, pursue a publishing strategy that optimizes the openness, quality, and integrity of the publication process, and develop innovative approaches to the assessment, organization, and reuse of ideas and data”. With the help of a Grant of \$9



million it could start two initial online journals, i.e., PLoS Biology and PLoS Medicine in 2003 and 2004 respectively. PLoS is a non-profit organisation unlike BioMed Central, though it also charges publication fees from the authors to recover editing and publication cost of the journals. Jerram, (2011) in Agrawal (2014) confirmed that though PLoS was receiving grants from several foundations spread globally but in 2011 for first time it declared that it does not bank on any foundation and is producing its cost itself. It follows the copyright model of Creative Commons where any article published on PLoS expects only proper citation and acknowledgment in the later research that come out referring it. As of September 2012, they are running seven peer review journals in medical and biomedical fields. These journals are most important open access journals in medicine and may equalize to commercial journals of Elsevier.

### **Hindawi Publishing Corporation**

Harris, 2007 in Agrawal, (2014) explained that Hindawi Publishing Corporation is the brain child of Ahmed Hindawi and Nagwa Abdel Mottalab and Egypt based commercial publisher of scientific, technical and medical (STM) journals. It was established in 1997 and launched its first commercial and subscription based journal in 1999. It was quite successful in its initial 5 years but ‘serial crisis’ and price negotiation made it difficult for smaller publishers to launch new journals and get the subscriptions. With the view that “Subscription publishing does not encourage innovation and will not reward the smaller players” Peters, (2007) as cited by Agrawal (2014), expressed that they tried a new model of publishing, i.e., Hybrid mode, where they launched a journal in 2003 with subscription based print and open access electronic mode and converted two subscription based journals to open access. By 2005, they experienced remarkable success in open access and started some more totally open access journals and also converted their early subscription based journals to open access. As of September 2012, Hindawi Publishing Corporation had been publishing 438 fully open access journals. Out of these, around 75% journals are carrying impact factor. To fund the open access publication they charge per page publication fees from the authors and are running several dual mode publication where print mode is subscription based while electronic mode is open access.

### **Scientific Electronic Library Online (SCIELO)**

Scientific Electronic Library Online, (2009) as cited in Agrawal, (2014) SciELO is a multi-country project initiated in Brazil by FAPESP (Fundação de Amparo à Pesquisa do Estado de São Paulo), in partnership with BIREME (the Latin American and Caribbean Centre on Health Sciences Information) in 1997. Once it began in Brazil, a number of countries have kept joining this project to provide open access “free to access and free to publish”. The countries joining this project includes Brazil, Argentina, Bolivia, Chile, Colombia, Costa Rica, Cuba, Mexico, Paraguay, Peru, Uruguay, Venezuela and South Africa. South Africa is recent joiner to this project and was working with SciELO in 2009. SciELO project is a very strong project of 977 peer reviewed journals (as on September 2012) spread over 15 nations and various languages of the world. Since 2002 it has been getting financial help from CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico).

### **Highwire Press**

HighWire Press, established in 1995, is a division of Stanford University Libraries producing more than 2500 online peer reviewed journals including subscription based, open access and delayed open access journals. Out of these journals, 61 journals are fully open access while 279 are providing delayed open access.

### **MDPI.COM**

MDPI, (2012) in Agarawal (2014) expressed that MDPI (Molecular Diversity Preservation International) established in 1996 is a Switzerland based organization aiming to deposit and exchange molecular and Biomolecular samples. In 2008, another institute was established with same abbreviation MDPI (Multidisciplinary Diversity Publishing Institute) with the objective to publish open access journals in various scientific and medical fields. The articles published by MDPI are fully open access. They cover the publication cost through article processing fees collected from the authors. MDPI was established in 1996 and as on September 2012, it has been running 89 open access journals. It is observed that number of MDPI publication increased only after the launch of MDPI.com in 2008 as before 2008 they were running only 8 journals. Various journals published by MDPI.com have good impact factor.

## **Others**

There are a number of small organisations, institutes and publishers who publish and provide open access to their publication which would be too long to mention here. However, these mainly include various research organisations and institutions, i.e., American Association of Pharmaceutics, American Clinical and Climatological Association, American Institute of Physics, American Medical Informatics Association, and many more, and commercial publishers like Wolters Kluwer Health/Medknow Publication (223 journals), Bentham Science Publishers(237 journals), Wiley-Blackwell Publishing(11 journals), Co-Action Publishing(27 journals), Dove press(126 Journals), German Medical Science(16 journals), Frontier Media SA(14 journals), Karger Publishers(5 journals), Nature Publishing Group(16 journals), Oxford University Press(11 journals), Sage Publication (4 journals) Copernicus Publication (30 journals), and others. They provide a number of open access journals and are strengthening open access movement. In addition to fully open access, these publishers also give option to authors to keep their article in open access by paying a publication fees. Directory of Open Access Journals (DOAJ) listed 9709 open access journal as of April 2014 in various languages and fields of knowledge. DOAJ was established in 2003 with listing of less than 500 open access journals. If we look at the statistics, it is easy to analyse that since then DOAJ has added approximately 3 journals per day to the golden road to open access. Directory of Open Access Repository (DOAR) on the other hand, lists over 2000 open access repositories including institutional repositories and subject repositories providing access to their contents. Open access through institutional repositories, or subject repositories is known as green road to open access (Agrawal 2014).

## **Open Access through online academic publishing**

Tenopir, (2004) as cited in Kassahun and Nsala (2015) expressed that Open Access publishing typically implies that the user is able to freely access scholarly materials because the price of publication has been assumed by another party, usually the author of the material, the author's institution, or the grant which funded the research. One can see that Open Access publication is not, therefore, a completely cost-free endeavor. Wren, (2005) in Kassahun and Nsala (2015), said, indeed, the costs have merely been shifted from the consumers of information to the producers, or those who fund them which applies equally to both the gold and green

models of Open Access. Gold Open Access model is when the author/researcher can publish his/her paper in Open Access Journals, where every paper is freely accessible to any user. On the other hand Green Open Access the author /researcher have to put research output in institutional repository or subject repositories.

Budapest Open Access Initiative, (2002) in Kassahun and Nsala (2015) recommends two complementary ways to publishing-

**Self-Archiving:** First, scholars need the tools and assistance to deposit their refereed journal articles in open electronic archives, a practice commonly called, self-archiving. When these archives conform to standards created by the Open Archives Initiative, then search engines and other tools can treat the separate archives as one. Users then need not know which archives exist or where they are located in order to find and make use of their contents.

**Open-access Journals:** Second, scholars need the means to launch a new generation of journals committed to Open Access, and to help existing journals that elect to make the transition to Open Access. Because journal articles should be disseminated as widely as possible, these new journals will no longer invoke copyright to restrict access to and use of the material they publish. Instead they will use copyright and other tools to ensure permanent Open Access to all the articles they publish. Because price is a barrier to access, these new journals will not charge subscription or access fees, and will turn to other methods for covering their expenses. Das, (2008) as cited by Sumadevi and Kumar (2018) expressed that the National Knowledge Commission of India (NKC) strongly recommends that peer-reviewed published research papers resulting from publicly funded research in India must be made available through open access channels.

### **The Roles of Academic libraries in promoting Open Access**

Cryer & Collins (2011) in Kassahun and Nsala (2015) mentioned that academic libraries have taken it to be their responsibilities and have paved a path in the expansion of the Open Access movement by promoting it in a variety of ways such as: including records for Open Access journals in their public catalogues and e-journals lists, collaborating with their institutions to establish institutional repositories, participating in institutional initiatives to encourage faculties to deposit their research outputs in the institution's repository, and becoming active OA journal publishers. With the explosion in the number of electronic or digital

documents, libraries started to store the electronic copies of theses, dissertations, articles and chapters written by faculty members and many other forms of scholarly content online for instant and easy access by the users of the library through Open Access. Librarians should organize Open Access conference and be giving seminars and workshops on the advantages of publishing online in open access journals; educate academic community about OA and Copy right issues creating pages in Library website as Hegde, (2017) in Sumadevi and Kumar (2018) explained in a study that, 67% of the respondents are aware of open access resources available in social science research, but they are not very keen to publishing their research work in open access journals. Hence, Billings, Hutton, Schafer, Schweik, and Sheridan (2012) opined that as the high cost of commercial research journals has motivated the academic library community to advocate for open access publishing with faculty, the high cost of commercially published college textbooks is broadening the conversation to include open educational resources.

Besides, accepting and implementing open access initiative, while putting into cognizance its numerous benefits, would be of great advantage to libraries especially in this time of recession where information resources such as foreign journals and books have skyrocketed. This inadequacy is evident in their limited collection development and has negatively affected users' patronage, students' performance in both internal and external examinations, and even poor theses/research works produced by these students. Therefore, it is worthy of note that most of these challenges mentioned can be minimized or even eradicated completely if information custodians and library managements can take advantage of open access initiatives (Ajibili, 2018).

### **Conclusion and Recommendation**

We conclude and recommend that academic libraries should promote awareness about Open Access to faculty through workshops, public lectures, meetings and conferences for them to publish in online open access journal. Currently, the librarians are experiencing paradigm shift from service providers to publishers, so the department of Library and Information Studies should consider this issue and include more Open Access course curriculum.

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