



Use of Open Access Scholarly Communications and Research Productivity of Librarians in Selected Academic Libraries in Southern Nigeria

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ABSTRACT

Open access technology guarantees free, unrestricted access and use of scholarly communications and this has supported research in many ways. This paper tries to find out academic librarians' use of open access for research productivity. Five research questions and three hypotheses were raised and formulated respectively. Descriptive survey was employed and from six universities libraries and 168 academic librarians were selected through a consensus technique. Results showed very high (82.4%) levels of awareness and positive (79.1%) attitudes among librarians who used open access for variety of purposes, consistency consulting Libre (91%), Academic (85.9%) and Black (80%) routes. Fully published journal articles (96.6%), peer-reviewed post prints (84.62%) and institution repository-archived theses and dissertation (83.2%) were mostly used for research. Based on the frequency of research output using open access, librarians were able to publish one or two papers within three months as against one or two papers yearly using subscription-based journals. There was significant positive relationship between awareness and attitude ($r = 0.969$, $P = 0.000$) and attitude and research productivity ($r = 0.856$, $P = 0.000$). There was also a significant ($\chi^2 = 105.0$, $P = 0.000$) and notable improvement (49.5% to 71.3%) in research productivity with use of open access journals in comparison with subscription based journal. Open access policy should thus be encouraged based on these findings.

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INTRODUCTION

The development of internet as one of the emerging tools of information and communication technology (ICT) has open access to many things around the world. The increasingly and interest in using internet for facilitating access to scientific research which came up in a conference held by the open society institute in Budapest on "Free online scholarship". The result of the conference was the released of the Budapesti Open Access Initiative (BOAI), which is the recognition of open access (OA) movement initiative for the use of Open Access. Open access materials consist of free online copies of peer-reviewed journal articles, conference paper and theses for

research productivity. Open access papers are mostly used and very important to publish research result and allows for easy dissemination of information. Poynder (2015) stated that OA aims at ensuring equal access to knowledge for all human. Suber (2010) further described OA as any scholarly communication that is freely available, have no licensing restrictions, free of copyrights, easily accessible and can be seen in full-text. Although, the advancement of information and communication technology (ICT) has given rise to information driven technology such as online OA model and it has resulted to high costs of publishing as well as the increasing rise in prices of scholarly journals published by publishing companies (Aliyu & Mohammed,



2014; Jain, 2012). Even with this, The Directory of Open Access Journals reported that there currently 125 countries with 16,228 open access journal with 11,668 having no article processing charge for authors (DOAJ, 2021). Open Access contents are of various formats, ranging from texts and data to software, audio, video and multi-media of scholarly articles and preprints. Several subtypes of OA are available for use by academic librarians to enhance their research productivity; Libre, Gratis, Green, Gold, Hybrid, Academic, Black, and Delayed offering various levels of accessibility to open access materials (Laakso & Bjork 2013; Jamali, 2017; Bjork, 2017).

The research productivity of every academic librarian is greatly influenced by his/her attitude following their level of awareness. Togia and Korobili, (2014) revealed that librarians are aware of the usefulness of OA journals in research, but publishing in OA has not been used in its full potential. Research has shown that there are negative perceptions of the quality of OA journal. Most of the higher institutions do not accept OA journals for promotions of academic staff (Xia, 2010). Solomon and Bjork, (2012) compared the scientific impact of OA journals with subscription journals showed that OA journals indexed in Web of Science or Scopus are of the same both in scientific impact and quality. Xia (2010) examined previous surveys on the changing pattern of scholar's attitudes towards open-access journals publishing from past years and recent years on attitudes towards OA, focusing on three areas of interest like awareness, choice of publishing and their attitude. A study conducted in Nigerian private Colleges libraries found out that academic librarians have positive perception towards Open Access (Utulu & Bolarinwa, 2009). Ugwanyi and Ugwuanyi (2013) pointed out that most librarians did not understand the concept of OA while in other climes; librarians have positive disposition towards OA for one reason or the other. This implies that OA journals are making waves across many disciplines including library science as many scholarly journals have embraced Open Access journals and increased of their acceptance among authors for publishing (Pujar, 2014). Access to scholarly literature makes

research activities very encouraging as it enhances research productivity. In the light of these assertions from literature it is important to look at the role open access play in the research productivity of librarians in southern Nigeria, in a view to understanding and formulating policies that will promote research among librarians.

Research Questions

The following research questions were set to guide the study:

1. Are librarians aware of the availability and accessibility of OA materials?
2. What is the attitude of academic librarians towards the use of OA materials?
3. What is the purpose of usage of OA Journals by academic Librarians?
4. What are the OA journals sources that librarians prefer to use for their research works?
5. What kinds of materials are frequently used to improve the research productivity of librarians in academic libraries?
6. How frequent do these librarians publish with the use of OA journals

Hypotheses

Three hypotheses were raised and tested in this study as follows. The

HO₁: There is no significant relationship between awareness and attitudes towards the use of OA journals by librarians.

HO₂: There is no significant relationship between attitude and research productivity in the use of OA journals by librarians.

HO₃: There is no significant difference in the use of open access and subscription based journals for improving research productivity.

METHODOLOGY

The study employed a survey design. The population of the study is 168 respondents which consists of academic librarians from selected public universities libraries in Southern Nigeria. The census sampling technique was used since the population is in a few hundreds. A well-structured questionnaire was used as a research instrument to collect data on librarians' levels of awareness, their attitude, purpose of use of open access materials. The instrument



was validated by experts in test and measurement in librarianship before administered to respondents. The subtypes of OA (e.g. Gold, Green, Libre, Gratis) preferably accessed by librarians were explained by author in a separate sheet attached to the research instrument for clarity in making their choices. Three (3) point Likert scale (agree, undecided and disagree) was used for respondents attitude and purpose towards used of open access journal (in accordance with Bashorun, 2016 and Coonin & Younce, 2010) and for the preferred type of open access level of accessibility policy. For the type of open access materials, a two point Likert scale of Yes or No was used. A criterion mean (percentage) of 2.0 (66.7%) was allocated for the three point scales while a 1.5 (50%) mark for used of open access material type. The level of awareness on the availability

and accessibility of open access for research activity was rated using six (6) point scale where one (1) represented 'not aware or no awareness' and six (6) connoted 'very highly aware'. Similarly, a complementary 6 point scale was assigned for frequency of research publication with one point for 'no paper published' and six for 'one or two papers monthly'. A total of 104 copies of the questionnaire administered were returned and analyzed representing a response of 62%. Data collected were analyzed using frequency counts, statistical means, standard deviation, percentages. Inferential statistics was employed in testing the three hypotheses.

RESULT AND DISCUSSION

The results of the study are presented in Tables 1 to 6 below. Table 1 showed the socio-demographic variables

Table 1: Socio-demographic variables of respondents

Socio-demographic variables	N	%
Name of University Library		
1. University of Uyo Library, Uyo, Akwa Ibom State	15	14.4
2. Niger-Delta University Library, Amassoma, Bayelsa State	14	13.5
3. University of Calabar Library, Cross Rivers	18	17.3
4. Delta State University Library, Delta State	26	25.1
5. John Harris Library, University of Benin, Benin City, Edo State	15	14.4
6. Donald Ekong Library, University of Port Harcourt, Rivers State	16	15.3
Total	104	100
Gender		
1. Female	68	65.4
2. Male	36	34.6
Total	104	100
Work experiences (years)		
1. 0 – 5	10	9.6
2. 6 – 10	35	33.7
3. 11 – 15	21	20.2
4. 16 – 20	26	25
5. Over 21	12	11.5
Total	104	100

Table 1 showed that 15 (14.4%) respondents were from University of Uyo Library, Uyo, Niger-Delta University Library, Amassoma with 14 (13.5%) respondents, University of Calabar Library, Calabar with 18 (17.3%) respondents, 26 (25%) respondents were from Delta State University Library, Abraka, 15

(14.4%) respondents were from John Harris Library, University of Benin while 16 (15.3%) respondent were from Donald Ekong Library University, Port Harcourt. Majority of the respondents used for the study are from Delta State University Library, Abraka. The possible reason for high number of respondents could be

as a result of the multi-campus nature of the University, Delta State University. Information related to the gender of the respondents showed that where 68 (64.8%) respondents are female, while 36 (34.6%) respondents were male. The majority of the respondents used for this study were female. The working experience of librarians showed that 33.7% of them have worked between six and ten years as academic librarians which was the highest. The least

(9.6%) was observed for those who have worked for one to five years. There was fair distribution based on working experience for the librarians sampled.

Results of Research Questions

Figure 1 elicits librarian's awareness on the availability and accessibility of open access journals for academic librarians.

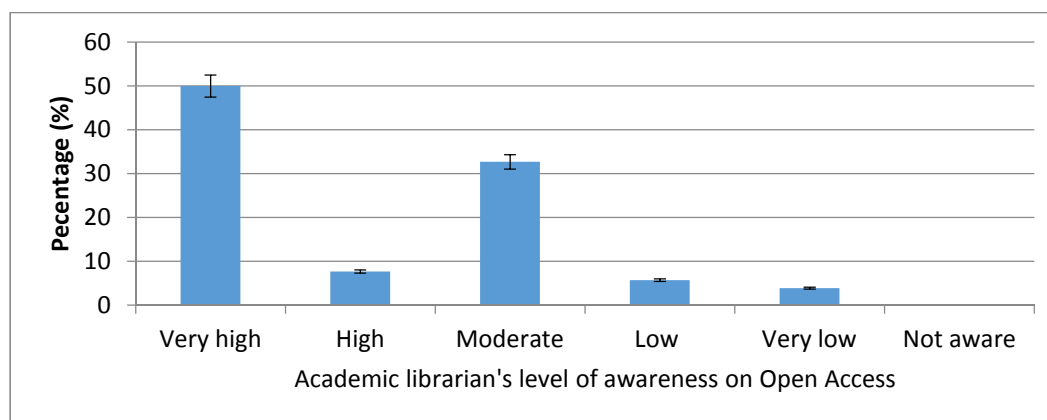


Figure 1: Levels of awareness of librarians on the availability and accessibility for open access materials for research productivity

Figure 1 showed that there is a considerable high level of awareness among librarians. Over 58% of librarians are fully aware while only 10% were found to have low levels of awareness. Using the 6-point scale, the mean of 4.94 (82.4%) showed that the academic

librarians have high level of awareness. This finding is similar to what Uwaifo and Obuh (2013) report from southern Nigeria. The attitude of academic librarians towards the use of open access is presented in Table 2 below.

Table 2: Attitude towards use of OA journals

S/N	Attitude	Mean	SD	% Acceptance
1	I frequently use OA materials due to ease with retrieval	2.75	0.60	91.67
2	I believe it is essential to academic growth	2.70	0.65	90.06
3	I can publish in subscription free OA journal but not the ones with article processing charge	2.66	0.58	88.78
4	OA resources are useful for regular distribution of research	2.55	0.77	84.94
5	It makes research activities more swift and encouraging	2.44	0.82	81.41
6	I usually use OA articles for my publishable research works	2.39	0.67	79.81
7	The idea of Open Access should be sustained	2.29	0.92	76.28
8	Quality is same with subscription journal	2.17	0.72	72.44
9	OA is very useful to our research activities	2.15	0.93	71.79
10	Publishing in open access may negatively affect my career	2.08	0.68	69.23
11	I support OA because they publish more frequently than others	1.90	0.95	63.46
	Weighted mean	2.37	0.76	79.08



The attitudinal disposition of academic librarians to the use of open access journals is presented in Table 2 with the result showing highly positive (mean = 2.37, 79%) attitude towards use. This re-emphasized the reports of Togia and Korobilli

(2014) that the attitude of researcher with the use of open access is fairly positive. Table 3 sheds light on the purpose for which open access journal and scholar communications are preferred for research productivity.

Table 3: Purpose for use of OA journals in research productivity

S/N	Purpose for research	Mean	SD	%
1	Free accessible	2.74	0.62	91.35
2	Allow for easy distribution of information	2.69	0.62	89.74
3	Tenure extension in academics	2.63	0.70	87.50
4	Allow for free knowledge acquisition	2.59	0.63	86.22
5	Promotion in academic ranks	2.50	0.74	83.33
6	Provides more information during research than subscription based journals	2.50	0.74	83.33
7	Gives room for archiving in personal database	2.15	0.90	71.79
8	To obtain information for grants-worthy research	1.80	0.93	59.94
Mean		2.45	0.74	81.65

Table 3 showed the reasons why academic librarians use open access journal for their research and the data revealed that the free accessibility status (91%) is the major reason why it is highly preferred. Several other factors were highlighted by the librarians and all with a very high positive response. The mean of 2.45

and deviation of 0.74 showed that all listed purpose for use was generally agreed to by the librarians. The findings from this study re-affirms the position of Bashorun (2016) on the reasons why open access is widely used by academics. Librarians' preferred route of open access is presented in Table 4 below.

Table 4: Preference for OA access models as best suited for research productivity

S/N	Subtypes of OA	Mean	SD	%
1	Libre	2.73	0.49	91.03
2	Academic	2.58	0.60	85.90
3	Black	2.40	0.82	80.13
4	Delayed	2.25	0.55	75.00
5	Hybrid	2.21	0.80	73.72
6	Gold	2.15	0.73	71.79
7	Gratis	2.10	0.66	69.87
8	Green	2.09	0.86	69.55
Mean (N=104)		2.31	0.69	77.12

Based on the policies surrounding the accessibility and use pattern of open access journals, Table 4 elicits respondent's mode of use of open access. The results showed that Libre which allows for use, re-use and unrestricted distribution of OA journal are mostly (mean = 2.73, 91%) consulted. This was keenly followed by Academic which had 85.9% acceptance (mean = 2.58) and Black with mean

of 3.40 (80.13% acceptance). The least used were Green (mean = 2.09, 69.6%) and Gratis (69.9%). The overall mean of 2.31 (SD = 0.69) with showed that a good number of subtypes are widely (77.12% acceptance) used regardless of the open access policies attached. The type of open access materials used by academic librarians in southern Nigeria is presented in Table 5.

Table 5: Types of OA materials used for research by librarians

S/N	Types of OA materials used for research	Yes	No	Mean	SD	% use
1	Fully published Journal articles	97	7	1.93	0.25	96.63
2	Peer-reviewed accepted post print	72	32	1.69	0.46	84.62
3	Unpublished Theses/Dissertations in institutional repositories	69	35	1.66	0.47	83.17
4	Individual website based articles	69	35	1.66	0.47	83.17
5	Published conference proceedings	66	38	1.63	0.48	81.73
6	Organizational website based reports/papers	58	46	1.56	0.50	77.88
7	Peer-reviewed (work-in-progress) pre-print	36	68	1.35	0.48	67.31
8	Published accept abstracts for conferences	36	68	1.35	0.48	67.31
				1.60	0.45	80.23
Mean (N=104)				1.35	0.48	67.31

Table 5 elicits from librarians their preference for OA sources, and the results showed that openly accessible fully published journal articles (96.6%), post prints (84.62%) and institution repository-archived theses and dissertation (83.2%) were mostly used for research. The least used were accepted abstracts and peer-reviewed pre-prints (mean = 1.35, sd = 0.48, 67%) and organizational based

reports (mean = 1.56, 77.9%) which may be due to the limited amount of authentic information one can retrieved from these OA material types.

Figure 2 shows the graphical comparison of research productivity using open access and subscription based journals.

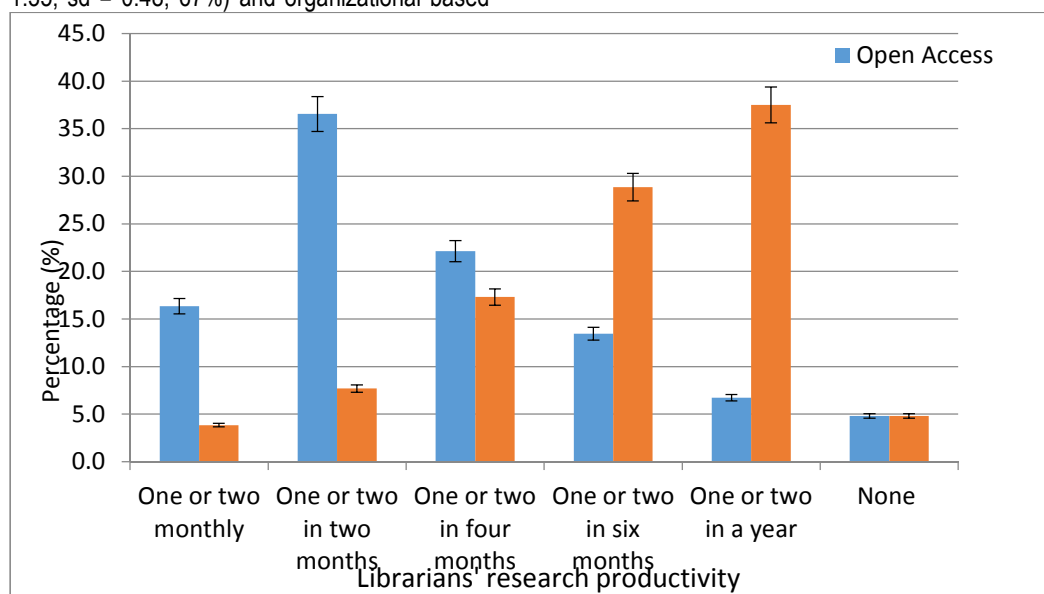


Figure 2: Comparing frequency of research productivity with the use of open access and subscription based journal

Figure 2 showed that most (37%) of the academic librarians publish one or two papers within a three month period whilst only an insignificant amount (4.8%) is yet to publish any

paper or one or two papers a month. This may be due to the number of years of working experience, lack of awareness on the importance of publication to career growth or low awareness



the usefulness of open access for research. It was also 2.9% barely publish one or two papers a year. The means (4.28 for open access and 2.97 for subscription based) show that librarians benefit more in terms of research productivity using OA journals than subscription based journals. This re-emphasizes the opinions of Bjork, Ross and Lauri (2009) and it is important to state herein that open access as the name implies should be made available and encouraged in academic environments. There were clear indications that publication frequency using

subscription was much slower high volumes but faster with very low volumes usually one or two yearly. Only 4.8% of the respondents hadn't published any paper. This may be due to their very low levels of awareness on the usefulness of OA or the freshly recruited librarians with less than 5 years of working experience.

Results of hypotheses

The hypotheses were tested in Tables 6 to 8 each corresponding to one hypothesis.

Table 6: Librarians' level of awareness and attitude towards use of open access journals

		Awareness	Attitude
Awareness	Pearson Correlation	1	.969**
	Sig. (2-tailed)		.000
	N	104	104
Attitude	Pearson Correlation	.969**	1
	Sig. (2-tailed)	.000	
	N	104	104

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

In response to hypothesis one in Table 6, the relationship between librarian's level of awareness and the attitude towards use of open access was elicited. The results indicate that the relationship is high, positive and significant with regards to the r-value of 0.969 ($P = 0.000$). It is passable to assert from this evidence that there

is a significant relationship between the level of awareness and the behaviour of librarians towards open access journal use. This is clear indication that when librarians are aware of the benefits, their attitude towards use will change as tentatively posited in Uwaifo and Obuh (2013).

Table 7: Librarians' attitude towards use of open access journals and research productivity

		Attitude	Productivity
Attitude	Pearson Correlation	1	.856**
	Sig. (2-tailed)		.000
	N	104	104
Productivity	Pearson Correlation	.856**	1
	Sig. (2-tailed)	.000	
	N	104	104

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

Table 7 represents hypothesis two and it elicited the relationship that exists between the attitude towards use of open access journals and the research productivity of the librarians. The results showed a strong positive relationship of $r = 0.856$ (at $p = 0.000$). This means that the better the disposition towards open access, the

likelihood of more publications by the academic librarian. The study has shown that those with higher research output most likely had more positive view on open access. Satisfactorily, the null hypothesis was rejected, to say, there is a significant relationship between the two variables.



Table 8: Librarians' research productivity using open access and subscription based journal

Mode of access	Mean	%	χ^2	P	df	Change
Open Access	4.28	71.3	105.0	0.000	25	21.8%
Subscription based	2.97	49.5				
N	104					

Table 8 showed the difference in the frequency of research productivity with the use of open access and subscription based journals in response to hypothesis three. The result showed that there was a significant change in the frequency of research output based on the P value of 0.000 which is lesser than or equal to the set value of 0.05 with a chi-square value of 105.0. The null hypothesis was rejected on the basis and alternate accepted. The percentage change showed an improvement from 49.5% to 71.3%. This is clear indication that open access policies have been beneficial scholarly communication and academic research for librarians.

CONCLUSION

There are clear indications that academic librarians in southern Nigeria have are fully aware of the availability and accessibility of open access scholarly communications that useful to research. The attitude of these librarians towards the use of open access is very positive and very encouraging. Open access is widely used due to its convenient and research friendly policies. Libre, Academic and Black sources are mostly used by the librarians. The open access materials mostly used are fully published peer-reviewed articles, theses and dissertation from institutional repositories and peer-reviewed journal post-print. The frequency with research output using open access journals is faster compared to when librarians use materials from subscription based journals. There is a strong positive relationship between awareness and attitude towards use of open access.

There is a strong positive relationship between attitude towards use of open access and research productivity of academic librarians and there is significant increase in the speed at which research is carried out using open access materials than that of subscription based journal. Open access technology in recent times has

proven to be very vital in the ready availability, accessibility, use and redistribution of knowledge, intellectual content and scholarly communication in the academic world. It has offered to a number of academic librarians, free access to important empirical and review reports that can guide and support their research activities. This in turn has improved the level of research productivity, support for teaching and learning in academic institutions and the growth and performance of academic libraries generally.

RECOMMENDATION

There is need to encourage open access policies in the academic world, and if need be, parent institutions should support open access initiatives by funding subscription to relevant database of scholarly communications through e-library projects. There is also the need to increase the awareness campaign to others types of academia.

REFERENCES

- Aliyu, A. & Mohammed, Z (2014) Deployment of Ahmadu Bello University Zaria, Nigeria Institutional Digital Repository. *Information Manager (The)*, 13(1-2): 30 – 34.
- Bashorun, M.T. (2016). Determinants of adoption and use of open access publishing by academic staff in Nigerian universities. *Journal of Information Science Theory and Practice*, 4(4): 49 – 63. Retrieved online March 12, 2021 from <https://doi.org/10.1633/JISTaP.2016.4.4.4>
- Bjork, B. (2017). Gold, green, and black open access. *Learned Publishing*, 30(2): 173 – 175. DOI:10.1002/leap.1096.
- Bjork, B., Roos, A., & Lauri, M. (2009). Scientific journal publishing: yearly volume and open access availability. *Information Research*, 14(1): Paper 391. Available



- at <http://www.informationr.net/ir/14-1/papers391.html>.
- DOAJ (Directory of Open Access Journal) (2021). *The directory of open access journals*. Retrieved online April 25, 2021 from <https://doaj.org/>
- Coonin, B. & Younce, L. (2010). Publishing in open access education journals: the authors' perspectives. *Behavioral and Social Sciences Librarian*, 29(2): 118 – 32. Retrieved online from <https://doi.org/10.1080/01639261003742181>
- Harnard, S., Brody, T., Vallieres, F., Carr, L., Hithcock, S., Gingras, Y., Oppenheim, C., Hajjem, C. & Hilf, E.R. (2008). The access/impact problem and the green and gold roads to open access: an update. *Serials Review*, 34(1): 36 – 40, DOI: 10.1016/j.serrev.2007.12.005.
- Jain, P. (2012). Promoting open access to research in academic libraries. *Library Philosophy and Practice (e-journal)*, Paper 737. Retrieved online March 12, 2021 from <https://digitalcommons.unl.edu/libphilprac/737>
- Jamali, H.R. (2017). Copyright compliance and infringement in ResearchGate full-text journal articles. *Scientometrics*, 112(1): 241 – 254. DOI: 10.1007/s11192-017-2291-4
- Laakso, M. & Bjork, B. (2013). Delayed open access – an overlooked high-impact category of openly available scientific literature. *Journal of the American Society for Information Science and Technology*, 64(7): 1323 – 132. DOI: 10.1002/asi.22856.
- Poynder, R. (2015). Open Access and the research excellence framework: Strange bell fellows yoked together by HEFCE. *The Winnover* (Online Newsletter). Retrieved online February 12, 2021 from <https://thewinnover.com/papers/open-access-and-the-research-excellence-framework-strange-bellfellows-yoked-togetherby-hefce>.
- Pujar, M.S. (2014). Open access journals in library and information science: a study. *Annals of Library and Information Studies*, 61: 199 – 202.
- Solomon, D.J. & Bjork, B. (2012). Publication fees in open access publishing: sources of funding and factors influencing choice of journals. *Journal of the American Society for Information Science and Technology*, 63(1): 98 – 107. Retrieved from <https://doi.org/10.1002/asi.21660>
- Suber, P. (2010). *Open access overview: focusing on open access to peer-reviewed research articles and their preprints*. Retrieved online on March 2, 2021 from <https://opensource.com/education/10/10/open-access-overview-focusing-open-access-peer-reviewed-research-article-and-their-preprints/>
- Togia, A. & Korobilli, S. (2014). Attitudes towards open access: A meta-synthesis of the empirical literature. *Information Service and Use*, 34(3/4): 221 – 231. DOI: 10.3233/isu-140742.
- Ugwuanyi, A. & Ugwungi, E.I. (2013). Open Access to knowledge; perception of librarians in colleges of education in south-east Nigeria. *Journal of Educational and Social Research*, 3(4): 29 – 35.
- Utulu, S.C. & Bolarinwa, O. (2009). Open Access initiatives adoption by Nigerian academics publishing. *Library Review*, 58(9): 660 – 669. DOI: 10.1108/0024253091910997946.
- Uwaifo, S.O. & Obuh, A.O. (2013). Researchers' attitude towards the use of open access scholarly publications: the position of LIS lecturers in southern Nigeria. *International Journal of Digital Library Services*, 3(2): 14 – 28.
- Xia, J. (2010). A longitudinal study of scholars attitudes and behavior toward open access journal publishing. *Journal of the American Society for Information Science and Technology*, 3(7): 25 – 30.