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# Effects of Academic Staff Competence and Internet Services on the Use of Open Access Journals in Federal Universities in North Central Nigeria

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# **EFFECTS OF ACADEMIC STAFF COMPETENCE AND INTERNET SERVICES ON THE USE OF OPEN ACCESS JOURNALS IN FEDERAL UNIVERSITIES IN NORTH CENTRAL NIGERIA**

**BY**

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## **ABSTRACT**

The study was motivated to assess academic staff competence and Internet services affecting the use of open access journals in federal universities in North Central Nigeria. Survey research design was used for the study. The population of the study comprised of 5,365 lecturers in seven federal universities covering both conventional and specialized universities. Sample sizes of 359 lecturers were randomly selected for the study. A structured questionnaire was designed and used for the study. Out of the 359 copies of the questionnaire administered, 330 copies were returned and used for the study. Collected data were analysed using frequency counts, percentages, mean and standard deviation. Inferential statistical tool such as Pearson Product Moment Correlation was used. Four research questions were answered and two null hypotheses were tested at 0.05 level of significance. The findings of the study revealed that the level of use of open access journals by academic staff was fairly high (weighted mean score = 2.84); the extent of the effect of Internet services by academic staff is fairly adequate. A significant relationship was established between academic staff use of open access journals and each of the following: extent of staff competence ( $r = .75$ ;  $df = 329$ ;  $p < 0.05$ ) and Internet services ( $r = .99$ ;  $df = 329$ ;  $p < 0.05$ ). Based on the findings, it was recommended among others that, there should be constant training and retraining of computer and Internet use to lecturers in the studied universities, Management of universities in the North Central, Nigeria should install and improve their Internet services, procure and provide adequate information and communication technology (ICT) facilities that would serve the university communities effectively.

**Keywords:** Academic Staff, Staff Competence, Internet Services, Use of Open Access Journals, Federal Universities, North Central Nigerian.

## **Introduction**

University generally is a centre of learning and a place where high productivity is expected on the part of researchers especially the faculty. Most researches in Nigeria and across the globe are carried out in universities and other related research institutes. The university is an institution of

higher education and research which awards academic degrees in various subjects at both undergraduate and postgraduate levels. Higher research productivity is expected in universities because they are centres of intellectualizing and the arrow head is the human instrument that are normally saddled with the responsibility of carrying out research activities in universities and other affiliated institutions.

Academic staff are those academic professionals who are vested with the responsibility of planning, directing and undertaking all academic activities including research within institutions (Higher Education Statistics Agency, 2009). Academic staff play important role in imparting knowledge and skills to students in an organizational academic environment. The academic staff is seeing as a role model, instructor and facilitator. Moreso, they are faced with challenges of trying to meet up to the task of delivering the subject matter, create a positive classroom environment, by been role models with greater level of praise and motivation to the students. (Ghani, Shahadan, and Liew, 2013). The academic staff have paid themselves with a lot of opportunities or sources in carrying out their research; one of such is, open access journals.

"Open access" is a simple term used to identify a work of art which is accessible to any user and at less-cost effective rate, on the Web. Suber (2012) defined open access literature as digital, online, cost-free, and free of a lot of limitations embargo on licensing. Suber (2012) further stated that peer-reviewed researchers are not the only one's encountering some restrictions to open-access contents that they could be in any format from texts and data to software, audio, video, and multi-media. The copyright owner is given the liberty to carryout computation functions such as; openly for reading, downloading, coping, printing, distributing, searching, linking to the complete content of the article, scroll it to index, as well as for lawful purposes, (Kwan, 2003; Suber, 2012).

Therefore, OAJs are educational literature that are accessible on the Internet to the users at a very less exorbitant cost and shunning all technical barriers with elements of legal infringement, and some require payment on behalf of the author (Suber, 2006). Suber (2006) also added that supplemental journals are sponsored by either government, information centre or academic institutions. Research grants specially set aside for the purpose are used to sponsor researchers. Grants usually from private or public agencies.

Open access journals have therefore, been a welcome development that is drastically changing the entire academic landscape in terms of distribution, access and publishing of intellectual content produced by scholars and researchers. Open access journals initiatives emerged as a result of individuals, academics and institutional consumers and libraries. This situation forced libraries to drastically reduce the subscription of journals, and consequently access to scholarly journals by scientist, scholars and academicians become undermined, especially to those from developing nations that are severely affected due to low income.

According to Giarlo (2006), the exorbitant prices of hard journals have brought about drastic decrease in journal subscriptions in institutions and libraries. This resulted into limitations of access, as scientists in the developing nations may not benefit immensely of the literature required in their research content, as to scholars that are well endowed nations. In academic environments, the traditional means of disseminating research materials has become obsolete that it slows down the speed of publishing scholarly journals. The development of ICT, particularly the Internet, electronic publishing has enhanced access to a myriad of information sources worldwide at a faster, easier and cheaper rate. Moller (2006) argued that the movement of OA initiatives as an outcome of enabling environment created by ICTs has drastically changed the frustrating conditions of accessing journals in the printed format and physical subscriptions. This development has suggested scholarly publishing as a new way to provide wider distribution of scholarly journals and content free for access, with no copyright restrictions to the end users.

"Use" as a concept has to do with the degree of importance you accord to something and where an item or object has no importance it cannot be put to use. In a nutshell, if something is of great relevance it is likely to be highly utilized (Oyedum, 2011). The rate at which open access journals is used in circulating and accessing intellectual content has enticed a remarkable number of attention of numerous researchers in recent times. OAJs also referred to as Gold Road to OA which is a peer-reviewed articles that are freely accessible to the users without any cost through the Web (Harnad, 2005; Jensen, 2010). Self-repositories is also referred to as Green Road to OA has made articles openly accessible in electronic format by the authors on the Web (Budapest Open Access Initiative, 2002; Harnad, 2005; Jensen, 2010). There are three most common ways of self repositories on the Web: researchers' own sites, research discipline, and organizational archives of person institutional environment (Bailey, 2006).

The issue of staff incompetency prompted Issak (2001) in Obinyan, Obinyan & Aidenojie (2006) to advocate the training and retraining of academic scholars on a regular basis in order for them to stay relevant to the needs of their communities. Academic staff should be knowledgeable enough and strive to acquire skills especially computer literacy skills for him to cope and survive in this information revolution society. Computer literacy encompass the skills to work on a computer as well as understand the language used in working with a specific system or systems. According to Otokunfor (2005) computer literacy can in other words mean the level of computer skills of a person and the extent to which the information could be utilized in promoting computer usage. Computer literacy is also defined as the skills to achieve desired goal via the computer system.

The development and availability of Internet services has enhanced such remarkable increase and advancement on people's knowledge of Internet and the positive impact it has on them. Electronic resources are also said to provide more comprehensive as well as up to date information to the users (Obaje and Camble, 2008; Saka and Abdulrahman, 2008; Kumar and kumar, 2010; Emwanta and Nwalo, 2013; Thanuskodi, 2012).

Okoye and Ejikeme (2010) highlighted some key concepts which has brought about the inadequacy in abilities to scrutinize the Internet, non-provision of the Web infrastructural, intransience of OA initiative due to instability in funding, unawareness of the existence of OAJs on the Web and the uncertainty way of OAJs as hindrance to the utilization of OAJs by scholars. It is against this background that the present study will investigate and find out how staff competence and availability of Internet services affect academic staff use of open access journals in North Central Universities in Nigeria.

From the above statement there is no doubt that academic staff in every university should be expected to make use of open access journals to satisfy their information needs. Use of Open Access Journals would assist them to render their services adequately especially in this information revolution age. Availability and use of open access journals would be an easy task where there is adequate Internet services and academic staff is competent to use the resources. Use of open access journals is usually affected by certain factors like inadequate power supply and poor Internet services to mention but a few. This situation is discouraging and needs to be empirically verified.

## **Statement of the Problem**

The emergence of Information and communication technology and the growing popularity of Open Access Journal scholarly publication have ignited many academic staff who resolve to use this medium to satisfy their ever increasing information needs. For academic staff to write their research articles, they require access to timely, accuracy, relevant and scholarly knowledge. Furthermore, the research articles published by them usually form a relevant result for OA archives. The rigorous work of writing and publishing in hard copies, time it takes to access the resources and the total cost of production is now reduced due to the advent of open access journals. Scholars visit their university libraries because most university libraries have ICT units. Unfortunately, the cost of having Internet services and level of staff incompetence even if this open access journals are free on the net, having access to explore it proved abortive due to low Internet bandwidth. People use certain things, like information resources adequately so that their knowledge is improved and then make impact to both national and personal development. From the researcher's observation, majority of the academic staff in most universities in the North Central Zone of Nigeria exhibits positive attitudes towards the importance of computer literacy but many of them are still finding it difficult to use electronic resources.

However, the fast in pace at which the Internet accessibility goes still pose a great deal of challenges to many of the Nigerian universities. Low Internet bandwidth accessibility in the Nigerian universities poses an obstacle to the utilization (underutilization) of open access journals. The study, therefore, is set to determine the extent to which academic staff competence and Internet services affect use of open access journals in Federal Universities in North Central Nigeria.

## **Objectives of the Study**

The objectives of the study is to assess the effect of staff competence and availability of Internet services on the use of open access journals in North Central Universities in Nigeria. The objectives of the study are to:

1. Determine the level of use of open access journals by academic staff in Federal Universities of North Central Nigeria.
2. Ascertain the extent of effect of Internet services on the use of open access journals by the academic staff in Federal Universities of North Central Nigeria.

3. Investigate the level of effect of staff competence on the use of open access journals by academic staff in Federal Universities of North Central Nigeria.
4. Identify ways of enhancing use of open access journals by academic staff in Federal Universities of North Central Nigeria.

### **Research Hypotheses**

The following null hypotheses were formulated and tested at 0.05 level of significance

H<sub>01</sub>. There is no significant relationship between the level of staff competence and use of open access journals by the academic staff.

H<sub>02</sub>. There is no significant relationship between functional Internet services and use of open access journals by academic staff.

### **Review of related empirical literature**

Ivwithreghweta and Onoriode (2012) examined awareness and use of open access journals by MLS students at the University of Ibadan, Nigeria. Research questions were centred around awareness, level of usage and benefit derived. The entire population of 144 masters' degree students in the Department of Library, Archival and Information studies was used. Copies of the questionnaire were administered and 140 copies were retrieved. Descriptive statistics were used to analyze the data. Findings showed that 76(54%) of the respondents being the MLS II agreed that they are knowledgeable of the OAJs. On the level of usage, 86(61%) being the majority of the respondents indicated to utilize the OAJs, while 28(20%) were the lowest respondents that used the open access journals. Online journals provide access to the literature necessary for research and was the major benefit the major obstacle was lack of knowledge of the existence of OAJs on the Net.

Anyira (2012) investigated services in Nigerian private universities using Western Delta University as the case study. The research questions used for the study were four, which are: extent of the accessibility to Internet, motivating factors to the use of Internet and purpose for using Internet. The population consists of 354 respondents comprising 231 students, 29 academic staff and 43 non-academic staff. A sample size of 240 respondents was selected and copies of questionnaire administered. Frequency counts and percentages were used in the analysis of data. Results showed that majority of the respondents accessed Internet slightly and not in full stream.

Purpose for using the Internet showed that respondents used Internet for broader scope in other to replace course materials as well as accumulate materials for literature review and for course registration and examination enrolment.

Anyanwu and Ossai-Onah (2013) investigated the use of Internet by Higher National Diploma (HND) students in federal polytechnic Nekede, Imo State, Nigeria. The study focused at evaluating the purpose and frequency of using net; knowledge of how to use Internet as well as factors affecting the use of Internet. Case study was used with HND students as the target population. Self-designed questionnaire statistics was used to analyze the data. The findings revealed that HND students used Internet to obtain educational and research information. Computer school was the only means by which students acquire knowledge on how to use the tools. Major limitations to the use of Internet include those of power failure, high charging of fees.

Ivwhregweta and Onoriode (2012) investigated the use of open access journals by lecturers at Western Delta University, Oghara, Nigeria. Survey technique was used for the study with the population of 50 lecturers. Questionnaire was the main data collection instrument used for the study. The 50 copies of the questionnaire were distributed to the respondents. Descriptive statistics were used to analyse data. The results showed that 100% respondents agreed that they have downloaded OAJ articles; made links to some publications via OAJs; accessed open access journals; cited articles through open access journals articles and made links to other articles from OAJs.

Evans and Elliah (2014) carried out a research on assessment of levels of open access awareness and how it is used in carrying out scholarly communication in Tanzanian universities: A case study of two universities. Questionnaire and oral interview were the two research instruments were used for collecting raw data. Data were analyzed by both descriptive and inferential statistics, descriptive such as frequency and percentages count and regression statistics. The study revealed that majority of staff, library and ICT members got their skills and knowledge of Internet through training and retraining of oneself in other to use open access scholarly communications, availability of open access journals are not guaranteed and one of the major challenges facing scholars is low quality of open access and inadequate knowledge and skills to publish in open access outlets.



Sandhu and Daviet (2011) conducted a study on use of open access resources by the engineering students of Punjab, India. Survey research design and 460 copies of questionnaire were completed by the respondents. Majority of respondents were familiar with open access sources which include; OAJs, self-repositories materials and institutional repositories on the Internet. The findings of the study indicated that the attitudes toward use of open access articles varies, and most agreed that open access resources are highly qualitative and open access journals would be of benefit to them. Most of the respondent used open access journals to self-archive materials or institutional repositories.

Mohammed and Garba (2013) conducted a study to investigate the awareness and use of open access scholarly publications by postgraduate students of faculty of science in Ahmadu Bello University Zaria (ABU), Kaduna State, Nigeria. Survey research was used in the study. Population of the study constituted all postgraduate students of faculties of science in ABU, Zaria. 100 copies of the questionnaire were purposely distributed to all departments in the faculty of science, and 97 were retrieved while descriptive statistics was used to analyzed the data. The study found that majority of the postgraduate students became aware of open access publications through browsing the Internet while most of the respondents agreed that they use open access publications to support their dissertations and thesis. The study recommended that the faculties should encourage postgraduate students to publish in open access journals.

Obuh and Bozimo (2012) assessed the awareness and utilization of OA scholarly journals by library and information science (LIS) lecturers in Southern Nigeria. 141 copies of questionnaires were distributed among lecturers of library and information science. 114 copies of questionnaire were usable. Data were analyzed using frequency, percentages, mean and regression analysis. The majority of both senior and junior LIS lecturers indicated that the level of use of open access journals were absolutely high. It was recommended that efforts be made towards inculcating the use of open access journals especially via enabling infrastructure and implementing policies such as lectures must deposit their works in open access archive.

Dulle and Minishi-Majanja (2009) showed researchers' perspectives on OA scholarly communication in six public universities in Tanzania. A total population of 1088 researches from six Tanzanian public universities with targeted respondents of 544 researchers were selected by using stratified sampling technique, with a returned statistics of 73%. Data collected was run by

use of SPSS. The research revealed that most of the users were aware and have positive attitude towards usage of open access resources. The outcome showed that reasonable number of Tanzanian researchers use open access platform frequently to access intellectual publication than sharing their own research outputs. It is most glaring that academic scholars would embrace OA publications in many cases of standard, recognition, and ownership were brought up. The study recommended that research institutes and universities should initiate institutional archives, with standard and quality assurance measures in the country to improve as well as promote dissemination of research findings initiating from these institutions.

Emojorho, Ivwighregweta and Onoriode (2012) concluded a study to investigate the awareness of open access scholarly publication between lecturers of Benin City, university in Nigeria. Descriptive statistics design was used through simple random technique of 70 lecturers. Data were analyzed using frequency-counts and percentages. The study found out that most of the lectures were aware of open access journals publications were highly introduced by their colleagues. It was revealed that erratic supply of electricity is low, low Internet services and infrastructures were some of the flaws were encountered. Provision of steady electricity power supply and the introduction of institutional archives are some of the ways suggested to encourage use of OA for intellectual publishing. The study recommended that there is need to improve electricity supply and provision of organizational archives should be made available by the university management to improve OA intellectual publications to the development of scholarship between lecturers.

Abubakar and Adetimirin (2015) conducted a study on influence of computer literacy on postgraduates' utilization of Electronic Resources in university libraries in Nigeria. Survey research design method was used through multi-stage sampling. A total of 2726 respondents from 16 universities Nigeria were obtained in this study. Copies of questionnaire were administered to the respondent. Data were analyzed using percentages and PPMC and results indicated that, the level of computer literacy of the respondents was average 56.3% while the weighted mean = 2.45 revealed that postgraduates use few electronic sources in their libraries which showed that the often use is low because weighted mean is less than criterion mean 2.50. Correlations between computer literacy have high positive significant relationship between postgraduate students utilization of e- sources.

Emwanta and Nwalo (2013) conducted a study on influence of computer literacy and subject foundation on the utilization of e-sources by students of the South Western Nigerian universities. Survey method was used using random sampling technique and three faculties were purposively selected and two departments from each of the universities, 275 respondents out of 904 respondents. Results revealed that some students visit the library to use e-resources as indicated by 8(7.1%) while 30(19.0%) of the respondents at the federal university of technology, Akure (FUTA) and Obafemi Awolowo University Ile-Ife (OAU). However e-resources are highly important for academic activities. The findings also revealed that Web is vastly useful in accomplishing vital writing to their subject foundation. Computer literacy encourages use of electronic resources by the students. The research recommended that university libraries management should improve the level of use of e-sources computer literacy availability within undergraduate students.

Adeniran (2013) conducted a study to utilized e-sources by undergraduate students at the University library of Redeemer's Mowe. The purpose for the research was to look at the use of e-sources by students of University of Redeemers. Survey technique was used for the study and the population constituted 256 respondents of 200 levels who utilized the library. A well-structured questionnaire was utilized as an information gathering instrument. The data gathered were analyzed using percentages and frequency. The results of the study proved that the utilization of electronic resources has immense effect on the scholastic exhibitions of the students; in any case, there is requirement for them to secure professional competence in the utilization of e- resources.

However, none of the studies discussed the academic staff competence and Internet services on the use of open access journals in Federal universities of North Central Nigeria. This gap is what this study has tried to fill.

## **Methodology**

The descriptive survey research was used for this study. The population of the study comprised 5,365 lecturers in the seven Federal Universities in North-Central, Nigeria. They are University of Ilorin, University of Jos, University of Abuja, Federal University Lafia, Federal University Lokoja, Federal University of Technology, Minna and Agriculture University of Agriculture, Makurdi. The data on population of the lecturers were gathered through the internal records of

these Universities as at December 2015. The sample size for the study constituted 360 lecturers. The sample size of the respondents for the study were determined by using the sample size formula given by Partem (1950). The simple random sampling technique was adopted in drawing the sample size from each of the universities. The data collected were analyzed by both descriptive and inferential statistics. The demographic information was analyzed using descriptive statistics such as frequency counts, percentages, mean and standard deviation while inferential statistic using Pearson Product Monument Correlation was used to test the null hypotheses. Statistics package for social sciences (IBM's SPSS version 23) was used for the analyses.

## **Results and Discussion**

### **Response Rate**

A total of three hundred and fifty nine (359) copies of the questionnaire were administered to the academic staff in the sampled universities. Out of this number, three hundred and thirty (330) copies of the questionnaire representing 91.9% were filled, returned and found usable for the analysis. University of Jos, Jos returned 77 (23.3%), University of Ilorin returned 65 (19.7%), University of Agriculture, Makurdi returned 56 (17%), University of Abuja returned 60 (18.2%), Federal University of Technology, Minna returned 45 (13.6%), Federal University, Lafia, Nasarawa State returned 17 (5.2%), Federal University, Lokoja, Kogi State returned 10 (3%) copies of the questionnaire, while twenty nine (29) copies representing 8.1% were not returned.

## Demographic Distribution of Respondents

The demographic variables such as gender, age, qualification and rank are identified in Table 4.3

**Table 1: Demographic Characteristics of Lecturer Respondents**

<b>Demographic Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>		
Male	196	59.4
Female	134	40.6
<b>Total</b>	<b>330</b>	<b>100</b>
<b>Age</b>		
22 – 39	115	34.8
40 – 49	83	25.1
50 – 59	81	24.6
60 & Above	51	15.5
<b>Total</b>	<b>330</b>	<b>100</b>
<b>Educational Qualifications</b>		
B.sc/B.Tech/BA/Bed	41	12.4
M.Sc/M.Tech/MA/Med	116	35.2
PhD	173	52.4
<b>Total</b>	<b>330</b>	<b>100</b>
<b>Rank</b>		
Professor	18	5.4
Associate Professor	58	17.6
Senior Lecturer	58	17.6
Lecturer I	39	11.8
Lecturer II	55	16.7
Assistant Lecturer	60	18.2
Graduate Assistant	42	12.7
<b>Total</b>	<b>330</b>	<b>100</b>

From Table 1, it is shown that 196 (59.4%) respondents were males, while 134 (40.6%) were females. This shows that there are more males than female academic staff in the universities studied.

In terms of the ages, the respondents within the age bracket of 22-39 years have the highest frequency of 115(34.8%), those within the age bracket of 40-49 years have the frequency of 83(25.1%), those within the age bracket of 50-59 years have the frequency of 81(24.6%), while the respondents that are 60 years and above have the least frequency of 51(15.5%).

In terms of educational qualifications, the PhD holders have the highest frequency of 173(52.4%), those that have M.sc/M.Tech/MA/Med were 116(35.2%) frequency, while the respondents with B.sc/B.Tech/BA/Bed were 41(12.4%) frequency.

In terms of the rank, the Assistant Lecturers have the highest frequency of 60(18.2%), Associate Professors have 58(17.6%) frequency, Senior Lecturers have 58(17.6%) frequency, Lecturer II have the frequency of 55(16.7%), Graduate Assistants have 42(12.7%) frequency, Lecturer I have the frequency of 39(11.8%), while Professors have the lowest frequency of 18(5.4%).

**Table 2: The level of use of open access journals by academic staff in Federal Universities**

S/N	Statements	SA 4	A 3	D 2	SD 1	Mean $\bar{X}$	SD U	Decision
1	I often use open access publications in my research	122(37.0)	192(58.2)	9(2.7)	7(2.1)	3.40	.62	A
2	Open access journals are usually my first priority when sourcing for materials for my work	92(27.9)	139(42.1)	76(23.0)	23(7.0)	2.95	.87	A
3	I usually retrieve scholarly content from open access journals	127(38.5)	180(54.6)	14(4.2)	9(2.7)	3.29	.67	A
4	I have some publications in open access outlets	76(23.0)	152(46.0)	85(25.8)	17(5.2)	2.91	.88	A
5	I have submitted many papers to open access journals	41(12.4)	116(35.2)	134(40.6)	39(11.8)	2.48	.86	R
6	I only cite and not publish in open access journals' publications	62(18.8)	56(17.0)	95(28.8)	117(35.4)	2.21	1.10	R
7	I have made links to other articles through open access journals	127(38.5)	159(48.2)	40(12.1)	4(1.2)	3.24	.70	A
8	Open access journals are usually my first priority when deciding on where to publish my work	51(15.4)	92(27.9)	139(42.1)	48(14.6)	2.46	.90	R
<b>Weighted mean</b>						<b>2.92</b>		

**A = Accepted, R = Rejected, SD (U) = Standard Deviation**

From Table 2 the lecturers' responses showed that out of the eight items listed for the lecturers to respond on the level of use of open access journals, it showed that five yielded high mean scores of 3.40; SD=.62 (item 1), 2.95; SD=.87 (item 2), 3.29; SD=.67 (item 3), 2.91; SD=.88 (item 4) and 3.24; SD=.70 (item 7). These five items focused on: they often use open access publications in their research, Open access journals are usually their first priority when sourcing for materials for their work, usually retrieved scholarly content from open access journals, have some publications in open access outlets, and made links to other articles through open access journals. All these items had high mean scores which were above the 2.5 mark on the 4 point likert scale.

However, three items had low mean scores of 2.48; SD=.86, 2.21; SD=1.10 and 2.46; SD=.90 respectively. These were item 5: I have submitted many papers to open access journals, item 6: I only cite and publish in open access journals' publications and item 8: Open access journals are usually my first priority when deciding on where to publish my work.

On the whole, the weighted mean score of 2.92 is fairly high indicating that Academic staff (lecturers) use of open access journals is fairly adequate.

**Table 3: The extent of the effect of Internet services on the use of open access journals by academic staff in Federal Universities**

S/N	Statements	SA 4	A 3	D 2	SD 1	Mean $\bar{X}$	SD U	Decision
1	The university provides functional computers to offices of all academic staff in the university	49(14.9)	80(24.2)	99(30.0)	102(30.9)	2.23	1.05	R
2	The university provides opportunities for capacity building on the use of computers/Internet for academic staff	83(25.2)	168(50.9)	51(15.4)	28(8.5)	2.93	.86	A
3	There is provision of free access to Internet for academic staff in their offices	113(34.2)	157(47.6)	25(7.6)	35(10.6)	3.05	.92	A
4	The university has ensured that the Internet network/services is functional	69(20.9)	189(57.2)	49(14.9)	23(7.0)	2.92	.80	A
5	The university Internet services is supported using fibre optic network	44(13.3)	178(53.9)	81(24.6)	27(8.2)	2.73	.79	A
6	There is provision of routers to each department to facilitate speed Internet	28(8.5)	51(15.4)	145(44.0)	106(32.1)	2.01	.91	R
7	There is provision of online databases in the office computers	41(12.4)	113(34.2)	127(38.5)	49(14.9)	2.44	.89	R
<b>Weighted mean</b>						<b>2.82</b>		

**A = Accepted, R = Rejected, SD (U) = Standard Deviation**

From Table 3 the lecturers' responses revealed that out of the seven items listed on the extent of the effect of Internet services by academic staff; four had high mean scores which were far above the criterion mean of 2.50 marks. These items include item 2: the university trained academic staff on how to use computer/Internet ( $\bar{X}$  =2.93; SD=.86); item 3: the universities provided free Internet access for academic staff in their offices ( $\bar{X}$  =3.05; SD= .92); item 4: the university ensured that the Internet services is functional for lecturers ( $\bar{X}$  =2.92; SD= .80) and item 5: the Internet services is supported by fibre optic in the university ( $\bar{X}$  =2.73; SD=.73). These were the

ones with high mean scores above 2.5 indicating that they contribute to high level of Internet services by academic staff in the university in North Central Nigeria, while the other three items produced low mean values below 2.50, showing that they do not constitute high Internet services by academic staff. These were items 1, 6 and 7 producing mean values of 2.23, 2.01 and 2.44 respectively.

On the whole, the weighted mean score of 2.82 is fairly high revealing that the extent of the effect of Internet services on the use of open access journals by the academic staff is fairly adequate.

**Table 4: The level of effect of staff competence on the use of open access journals by academic staff in Federal Universities**

S/N	Statements	SA 4	A 3	D 2	SD 1	Mean $\bar{X}$	SD U	Decision
1	I have general knowledge on the use of computer services	147(44.6)	177(53.6)	5(1.5)	1(.3)	3.42	.56	A
2	I am proficient on the use of Internet facilities which has enhanced my use of open access journals	113(34.2)	205(62.1)	9(2.7)	3(1.0)	3.29	.57	A
3	I access E-Journals with ease and equally have access to other Internet resources with much comfort due to the skills that I have acquired	122(37.0)	182(55.1)	17(5.2)	9(2.7)	3.26	.68	A
4	I have undergone training on how to use Internet services	90(27.3)	175(53.0)	39(11.9)	26(7.9)	2.99	.85	A
5	I attend short courses on computer appreciation which have heightened my skills in accessing e-journals	104(31.5)	147(44.6)	42(12.7)	37(11.2)	2.96	.95	A
6	I am Information and communication Technology (ICT) compliant	111(33.6)	203(61.5)	1(.3)	15(4.6)	3.25	.68	A
7	I am conversant with the Internet search i.e. Google, Yahoo, Altavista...	196(59.4)	115(34.9)	12(3.6)	7(2.1)	3.51	.68	A
<b>Weighted mean</b>						<b>3.42</b>		

**A = Accepted, R = Rejected, SD (U) = Standard Deviation**

Table 4 showed that out of the seven items listed for the lecturers' to respond to on the level of effect of staff competence by academic staff in North Central Universities in Nigeria; all the seven items produced high mean scores which were above the mean score of 2.50 mark on the 4-point Likert scale, indicating that the level of staff competence by academic staff in North Central is high and adequate. These items include item 1: have general knowledge on how to use computer ( $\bar{X} = 3.42$ ;  $SD=.56$ ); item 2: proficiency with Internet facilities that enhanced my use



of open access journals ( $\bar{X} = 3.29$ ;  $SD = .57$ ); item 3: accessing E-journals with ease and have access to Internet resources with comfort due to the skills acquired ( $\bar{X} = 3.26$ ;  $SD = .68$ ); item 4: attended training on how to use Internet services ( $\bar{X} = 2.99$ ;  $SD = .85$ ); item 5: attended computer appreciation courses that heightened my skills ( $\bar{X} = 2.96$ ;  $SD = .95$ ); item 6: compliancy with information and communication Technology (ICT) ( $\bar{X} = 3.25$ ;  $SD = .68$ ) and item 7: conversant with the Internet search engines ( $\bar{X} = 3.51$ ;  $SD = .68$ ).

On the whole, the weighted mean score of 3.42 which is the extent of staff competence in the use of open access journals in North Central universities in Nigeria is high and adequate.

**Table 5: Enhancing the use of open access journals by academic staff in Federal Universities**

S/N	Recommendations	Freq.	Percentage	Mean	SD
1	Internet connectivity needs to be improved	316	95.8	1.04	.20
2	Provision of constant power supply	307	93.0	1.07	.26
3	Provision of funds by government, university management and other donor agencies	307	93.0	1.07	.26
4	Academia should publish more on open access journals	192	58.2	1.42	.49
5	Provision of adequate ICT connectivity and infrastructure	291	88.2	1.12	.32
6	Adequate bandwidth makes utilization of open access journals faster and easier	274	83.0	1.17	.38
7	Constant training on computer appreciation and Internet usage	296	89.7	1.10	.30

Table 5, showed that majority of the respondents subscribed to all the suggested ways listed for enhancing the use of open access journals. A total of 316(95.8%) of the respondents, which is the highest percentage suggested improving the Internet connectivity; 307(93.0%) suggested provision of constant power supply; 307(93.0%) equally suggested provision of fund by government, university and donor agencies; 192(58.2%) suggested academia to publish more on open access journals while 291(88.2%) suggested provision of adequate ICT connectivity and infrastructure. Some others also suggested adequate bandwidth makes utilization of open access journals faster and easier 274(83.0%), while 296(89.7%) of them suggested constant training on computer appreciation and Internet usage.

### Hypotheses Testing

Two null hypotheses were tested in the study at 0.05 level of significance. The results of the tests are as follows:

**Hypothesis 1:** There is no significant relationship between the level of staff competence and use of open access journals by the academic staff.

**Table 6: Level of staff competence and use of open access journals**

Variables	N	Mean	Standard Deviation	Pearson Coefficient (r)	Df	P <sub>value</sub>
staff competence on the use of open access journals	330	3.241	.456	.752	329	.023*
Level of use of open access journals	330	2.843	.360			

\* Correlation is significant at the 0.05 level (2-tailed).

From Table 6, the relationship between staff competence and level of use of open access journals by the academic staff is positive and significant ( $r = .752$ ;  $df = 329$ ;  $p < 0.05$ ). This means that staff competence improves, the use of open access journals, and this is to a significant extent. Hence the null hypothesis is rejected.

**Hypothesis 2:** There is no significant relationship between functional Internet services and use of open access journals by the academic staff.

**Table 7: Internet services and use of open access journals**

Variables	N	Mean	Standard Deviation	Pearson Coefficient (r)	Df	P <sub>value</sub>
Internet services on the use of open access journals	330	2.614	.644	.990	329	.000*
Level of use of open access journals	330	2.843	.360			

\* Correlation is significant at the 0.05 level (2-tailed).

Table 7 showed that provision of functional Internet services have a very high positive correlation but significant relationship with academic staff use of open access journals ( $r = .990$ ;  $df = 329$ ;  $p < 0.05$ ). This means that Internet services significantly influence the intensity of use of open access journals by the academic staff. Therefore, the null hypothesis is rejected.

## **Discussion of the Findings**

### **Findings based on the research questions**

The study revealed that the academic staff in federal universities in North central Nigeria use open access publications in research, use open access journals when sourcing materials for work, always use it to download scholarly content, have some publications in open access outlets and make links to other articles via open access journals (Table 2). This study is similar to the findings of Ivwighregweta and Onoriode (2012) in their study of "Use of open access journals by lecturers" which revealed that use of open access journals for all the lecturers in the study was generally high. This finding also agreed with the findings of Kin (2006) who reported that respondents have access to research or teaching materials through public web site.

This high use of open access journals by the academic staff in North Central Nigeria in the present study could be as a result of information explosion which is forcing every information seeker to depend not only on print resources but mainly on electronic resources such as open access journals.

The study found that the extent of the effect of Internet services on the use of open access journals by academic staff in the North Central Nigeria is fairly adequate (Table 3). The reason for high use of open access journals by academic staff in federal universities in North Central Nigeria could be ascribed to the present day race for use of Internet services for communication, dissemination and sharing of information and knowledge among the academicians and scholars.

This finding is similar to Utulu and Bolarinwa (2009) findings which revealed that there was so much awareness and adequate knowledge by the faculties on the use of open access journals. In addition, it is important to point out that in Nigeria, the use of Internet had come to stay as it has gain a wider acceptance in almost all spheres of academic environment. This is necessary because an academic environment is where lecturers need to search for more information outside their own institutions, in order to enhance their academic performance. This is attributed to the advent of Information Age which is also described as the digital age, the age of change, the electronic age and cyber revolution age. Internet has practically reduced the whole globe into an information village. World of information are available on the Internet. Where Internet are connected to all academic staff offices and the entire university campus, the academic staff

would definitely be up-to-date in his publication outputs and also be able to impact adequate knowledge to students.

From the study it was revealed as shown in (Table 4) that the level of effect of staff competence on the use of open access journals is fairly adequate. The high academic staff competence in the use of open access journals in federal universities in North Central Nigeria could be attributed to the impact of various trainings and retrainings on Information and Communication Technology (ICT) and other staff development programmes in form of conference, workshop, seminars and other in-service-training programmes the staff receive from some agencies such as Tertiary Education Trust Fund (TetFund), Digital Bridge Institute (DBI) and other Continuous Professional Development (CPD) Programmes through the university managements.

This finding is in conformity with the findings of Sandhu and Daviet (2012) as well as Ivwighreghweta and Onoriode (2012) respectively. The authors discovered that respondents were conversant with open access journals, institutional repositories and self-archived on the web. Furthermore, they also discovered that the respondents were conversant with downloading exercise as well as linking printed materials to access articles published and referenced.

The study revealed that majority of the respondents accepted all the suggested ways listed for enhancing the use of open access journals in federal universities in North Central Nigeria. Many of them indicated that there is need for improvement of Internet connectivity, followed by those who suggested the need for provision of constant electricity supply and provision of fund by government, management and donor agencies. Others indicated the need for constant training on computer and Internet use, provision of adequate ICT infrastructure, sufficient bandwidth for faster and easier utilization as well as academia publishing more on open access journals (Table 5). Perhaps, majority of the respondents suggested adequate Internet connectivity, provision of regular power supply and government intervention in terms of funding as this would improve Internet services which would invariably attract academic staff to frequently use open access journals. Oyedum (2011) revealed that every academic staff wants to acquire new knowledge in their areas of specialization. To achieve this effectively there is need for constant training and retraining of lecturers on computer and Internet use as they need adequate skills to utilize open access journals to support research and classroom teachings. They also need ICT infrastructure or facilities and adequate bandwidth for meaningful use of open access journals.

These suggested ways of enhancing academic staff use of open access journals is in order as it is supported by Emojorho, Ivwighregweta and Onoriode (2012) who in their study suggested that there is need to improve electricity supply for adequate Internet services. Internet services or connectivity and provision of institutional repositories should be provided by the various management of the universities to enhance open access journals publishing to the development of scholarship among lecturers. Ivwighregweta and Onoriode (2012) have a similar view that adequate ICT infrastructure should be made available by university management in order to encourage quality research by academic staff (lecturers).

### **Findings on the tested hypotheses**

The study shows that staff competence has a positive significant relationship with academic staff use of open access journals ( $r=.752$ ;  $p<0.05$ ) (Table 6). Therefore, the null hypothesis was rejected, indicating there is significant relationship between the level of staff competence and level of use of open access journals by the academic staff. This study collaborates the findings of Abubakar and Adetimirin (2015) who found that there was significant relationship between computer literacy and use of e-resources with high positive correlations among the lecturers. The findings equally agreed with that of Emwanta and Nwalo (2013) who reported that computer literacy and subject background influence use of electronic resources.

The study revealed that provision of functional Internet services have significant relationship with academic staffs' use of open access journals ( $r=.997$ ;  $p<0.05$ ) (Table 7). Thus, the null hypothesis is rejected, implying there is significant relationship between functional Internet services and use of open access journals by academic staff. This is not surprising since everybody in the society especially the academic staff are eager to retrieve up-to-date information in their areas of specialization. Therefore, since the main duty of every academic staff is to impart adequate knowledge to students, it is expected that with their computer literacy knowledge there will always be the urge to use Internet services. Thus, the availability of functional Internet services would always attract lecturers to use and access open access journals in the net.

This finding disagrees with the findings of Mann et'al (2008) who revealed that despite the fact that majority of the respondents indicated to have used freely available materials in the net, only

few respondents published in the open access. This was attributed to the fact that there is contention on the eligibility of the editorial board of the open access journals, as whether the open access journals are critically assessed or not and that is why most of the universities in the North Central Nigeria do not accept open access journals for their promotion exercise.

### **Conclusion**

Based on the findings of the study one would, therefore, conclude that academic staff competence and Internet services are significant for adequate use of open access journals in federal universities in North Central Nigeria. Therefore, there is need for improved level of Internet connectivity for academic staff (lecturers), provision of adequate power supply, provision of current and adequate ICT facilities and infrastructure, provision of fund by government and other agencies such as TetFund, provision of fast and adequate bandwidth to enhance utilization of open access journals and the need for Nigerian universities to recognize and allocate good points to open access journals in their promotion exercise especially the universities in the North Central Nigeria. Once these are carefully taken care of in the federal universities of North Central Nigeria the level of use of open access journals by the academic staff is expected to improve.

### **Recommendations**

Based on the findings of this study, the following recommendations are hereby made to improve the academic staff use of open access journals in federal universities in North Central Nigeria:

1. Management of universities in the North Central, Nigeria should improve and open their Internet services, procure and provide adequate information and communication technology (ICT) facilities that would serve the university community especially the lecturers better.
2. There should be constant training and retraining of computer and Internet use to lecturers in the studied universities.
3. Provision of Internet connectivity, constant electricity power supply and adequate bandwidth for easy and fast utilization of open access journals in the North Central Nigerian universities should be given prime attention by the university management. It is only when this is achieved that the lecturers would effectively utilize open access journals for their academic development.

4. Federal Government of Nigeria should adequately fund the federal universities in the North Central Zone of the country. This would enable them to equip their university libraries with current books, journals and functional Internet facilities as well as other ICT gadgets in order to enable the academic staff meet up with their responsibilities.

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