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Access to Online Academic Databases to Improve the Quality of Academic Research among Postgraduate Students of Education in Nigerian Universities

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Abstract

This study was designed to determine the access to and utilization of online databases by postgraduate students of the faculties of education of the six foremost universities in Nigeria. The study sought to ascertain the online databases accessed by the most of the students, factors influencing regularity of access and constraints to access regular access to the databases. A total of 365 postgraduate students were randomly drawn from the six universities by proportional allocation for the study. Questionnaire was used to obtain relevant data which were analyzed using multiple responses and binary logistic regression. The most accessed online databases were Google Scholar, ResearchGate, JSTOR, Science DOAJ and EBSCOHost, motivated by free access and relevance to research interests. The documents were mainly used for postgraduate dissertation/thesis and assignments. Sex, degree in-view, free access, finance, personal laptop and Smartphone, and helpfulness of research materials significantly influenced regularity of access. The males are 0.963 times more likely to access online databases regularly than the females while the PhD students are 1.041 times more likely to access online databases more regularly than the other postgraduate categories. It is recommended that the universities should subscribe to notable online databases and improve on the quality of institution-based internet facility to boost access to and of online databases.

Keywords: constraint; internet access; logistic regression; multiple response; online database

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1. Introduction

In the past, the academic community was slowed down by lack of current literature and resources for quality research outputs (Rafi, Ming and Ahmad, 2018). However, the renaissance in the information and communication technology (ICT) in the early 1990s birthed serious awakening in information storage, sharing, access and usage of research materials among academics and researchers. The dawn of digital technology has rapidly cut boundaries and made available standard rich, reliable and accessible databases for journal articles, electronic books (e-books) and other electronic resources for all areas of academic research (Montenegro et al., 2016 and Rogers and Nielsen, 2017). The online database resources have become important component of many academic libraries who make available bibliographic, abstracts, multimedia, full-text, directory and numerous database resources to the staff and students of the academic institutions (Naqvi, 2012 and Kwadzo, 2015). The exciting aspect of the online resources database is that it is widely available, could be accessed from anywhere at any time and by many users at the same time and at the researcher's convenience (Emwanta and Nwalo, 2013, Kwadzo, 2015 and Ani, Ngulube and Onyancha, 2015).

Postgraduate students in their respective disciplines are among the major beneficiaries of the online databases revolution as it facilitates their research activities (Montenegro et al., 2016). Despite the obvious advantages and prospects of the online databases for academic research and development, access to and use of these databases by postgraduate students, especially in developing countries like Nigeria is still engrossed in many challenges (Akinola et al., 2018). Therefore, this study is aimed at assessing the faculty of education postgraduate students' access and use of online databases for their postgraduate research activities, the constraints to accessing the digital platforms.

2. Literature Review

The emergence of online research databases has been the subject of many research activities across the globe. Different authors have studied the impact of the digital research databases on the academic and research productivities of different disciplines and careers. Shaqour and Daher (2010) conducted a study on the factors which influence the use of electronic resources by the students of the An-Najah National University, Palestine by collecting data using questionnaire. Their findings revealed that the students are well-informed of the benefits of the electronic resources to academic development. They discovered that the students' use of the electronic resources is strongly correlated with the provision of the electronic resources by the university but are weakly related to course requirements, students' attributes and instructor support. Another case study on the use of certain electronic database, Research4Life, for research development was carried out by Obasuyi and Okwilagwe (2016) at the National Agricultural Research Institute in Nigeria.

Many studies have focused their assessment on the university lecturers to ascertain the impact of the emergent electronic databases on their research outputs. The number, quality and frequency of research publications, conferences and workshop attendances and other academic activities have been reviewed by many authors. Rafi, Ming and Ahmad (2018) studied the impact of digital library database resources on the productivity of academic research of 52 universities provided by Higher Education Commission (HEC). The aim of the study was to develop excellent academic policy through evaluation of the effectiveness of the database resource utilization. Using simple linear regression to analyze the impact of digital databases on research productivity, it was shown that access to digital databases has significantly impacted on the research productivity of the universities. In conclusion, they

submitted that ultimate use of standard database resources can help higher academic research in developing innovative ideas and improve researchers' cognitive abilities.

Eiriemiokhale (2019) evaluated the influence of demographic factors on the utilization of electronic databases by the university lecturers in the Southwest region of Nigeria. The target population comprised of all the lecturers in twelve public universities in the region. The study revealed that the electronic databases available to the lecturers in the region are Directory of Open Access Journals, African Journals Online, International Research Journals, Google Scholar, etc. Job status and age of the lecturers are the two demographic factors significantly influencing use of electronic databases by the lecturers of the universities in Southwest, Nigeria. Related study was conducted by Aina (2014) on the level of awareness, accessibility and use electronic databases by the academic staff of Babcock University Business School in Nigeria. Also, Farouk and Yusuf (2016) have evaluated the factors affecting the use of electronic databases by the academic staff of Bayero University, Kano State, Nigeria. Adetomiwa and Okwilagwe (2018) focused the study of awareness and use of electronic databases to determine the level of research productivity of lecturers on the academic staff of private universities in Nigeria.

Some studies have been conducted to ascertain the impact of access to electronic resources by undergraduate students on their academic performances (see Emwanta and Nwalo, 2013 and Adepoju, 2017). However, the postgraduate students are the ones at the forefront of budding academic research and development. The influences of the utilization of materials from online databases by postgraduate students have been given serious consideration by some researchers. Naqvi (2012) studied the use of electronic databases by postgraduate students and researchers at GBPUAT Library in India. The aim was to evaluate the impact of access to databases on the research productivity of the postgraduate students after huge investment on subscription, growth and management of the electronic databases in

the library. Moreover, most of the postgraduate students and researchers received training on how to access online databases. The study revealed that the electronic databases highly used by the postgraduate students are AGRIS, AGRICOLA, CAB Abstract and agriculture and natural resources. The level of awareness and use of electronic databases by the postgraduate students of the University of Ibadan, Nigeria, was researched on by Akinola et al. (2018). Their study was set to ascertain how well-informed the postgraduate students of the university are of the existence of these electronic databases, the frequency of use, reason for access, level of ICT skill and challenges in the use of the digital databases. The electronic databases considered are JSTOR, AJOL, AGORA, HINARI, EBSCOHost, DOAJ and others. The study revealed that most of the postgraduate students are aware of most of the online databases but are not aware of the ones made available by the university. Furthermore, it was shown that the frequency of use of the electronic database by postgraduate students is low.

Most of the studies focused on utilization of electronic databases by academic staff of private and public universities while some considered postgraduate students of some selected institutions. This study considered the postgraduate students of the faculty of education in the six foremost universities in Nigeria, University of Ibadan, University of Nigeria, Nsukka, University of Lagos, Obafemi Awolowo University, Ahmadu Bello University and University of Benin. These universities were established around the time of Nigeria's independence in 1960 and over the years, they have been the pacesetters in academic research and development in Nigeria. The faculty of education in each of the universities is known to have always produced the highest number of graduating postgraduate students each year. Therefore, it is important to study their responses to the use of online databases for their research and factors and constraints underlying their use of the electronic research materials. Therefore, the objectives of the study are (i) to ascertain the most frequently accessed online database for the education postgraduate students; (ii) the factors

influencing regular access and use of the online database; and (iii) constraints to access and utilization of online databases for quality academic output. Three research questions were developed to facilitate achieving the objectives of the study and the research questions include:

- (i) What are the most frequently accessed online databases by postgraduate students of Education in Nigerian universities?
- (ii) What are the reasons and motivations for accessing an online database?
- (iii) What are the factors influencing regular access to online databases?
- (iv) What are the constraints to accessing online databases by the in Nigerian universities?

3. Methodology

The study adopted survey research design which primarily permits the use of questionnaire for data collection from selected sample respondents (Akinola et al., 2018). The population of the study is made up of the 7247 postgraduate students of the faculties of education in the six foremost universities in Nigeria for the 2019/2020 academic year. The universities are University of Nigeria, Nsukka, University of Ibadan, Obafemi Awolowo University, University of Lagos, Ahmadu Bello University and University of Benin. The 2019/2020 academic session is important because these students are still on their programmes which were delayed for over nine months by the COVID-19 lockdown and the nationwide strike by the Academic Staff Union of Universities in Nigeria. The registered number of students admitted into the education programmes in the six universities were obtained from the academic records of their various postgraduate schools. A sample of 365 postgraduate students was drawn from the population at 95 % confidence level using the online Sample Size Calculator by the Australian Bureau of Statistics. Using proportional allocation, the sample size of 365 was allocated to the six universities according to their education

postgraduate students' population in the order: 30, 92, 32, 161, 22 and 28, respectively, for University of Nigeria, Nsukka, University of Ibadan, Obafemi Awolowo University, University of Lagos, Ahmadu Bello University and University of Benin. The required number of students was selected from each of the school's students' records using systematic sampling and their e-mail addresses and phone numbers were secured from the same source as well.

Structured questionnaire was used to collect data on the students' demographic and research profiles; access and utilization of online academic databases; challenges to access and use of the databases; and possible ways to sustain/improve access to online databases for quality academic research and output among the students. To ensure efficient and effective distribution and collection of the questionnaire, the postgraduate students identified for the study were notified through their e-mail addresses and phone numbers about the survey and the questionnaire completion beforehand. This made it easy for the fieldworkers who found most of the students ready for the survey when they arrived with the questionnaire; there was no need for callbacks and the return rate was very high.

To facilitate achieving the objectives of the study, the data were analyzed using frequencies and percentages on multiple responses and binary logistic regression to ascertain the factors influencing the regularity of access/use of the online databases. In the multiple response analysis, response items have options which the respondents were allowed to select as many as applied to them. Hence, the frequency for an option shows how many respondents out of the 365 sample respondents selected that option and the percentage reflects the proportion. The logistic regression was used to predict the dichotomous dependent variable (regularity of access to online database) from a set of independent (predictor) variables. The dependent variable was categorized into regular and non-regular access to online academic/research database. Regular access was coded '1' while non-regular access was

coded '0' which transformed regularity of access to binary variable and necessitated the use of binary logistic regression. The predictor variables are sex, age, degree in-view, source of sponsorship, quality of research materials, free access to research materials, adequate ICT infrastructure in school, presence of ICT assistant in the university library, availability of sufficient finance to buy research, availability of personal laptop, smart phone, etc., and information from online database being helpful. The binary logistic regression considers mixture of categorical and continuous predictor variables. The categorical predictor variables are gender (with two categories, male and female), degree in-view (with five categories, Masters' degree, Postgraduate Diploma, M. Phil, Masters'/PhD and PhD) and source of sponsorship (with five categories, scholarship, parents, guardian, self and philanthropist). The other predictor variables are continuous. The SPSS Version 26 statistical software was used to aid the analysis of the data.

4. Results and Discussion

Frequencies and percentages of the multiple response analysis of the databases being accessed and used by the postgraduate students are summarized in Table 1.

Table 1: Percentage Summary of Online Databases Accessed by Respondents

Online Database	Frequency*	Percent
JSTOR	162	44.4
Science Direct	111	30.4
Google Scholar	232	63.6
EBSCOHost	144	39.5
African Journals Online	107	29.3
BASE	20	5.5
CiteSeerX	20	5.5
Directory of Open Access Journals	160	43.8
Educational Resource Information Center	88	24.1
Index Copernicus	13	3.6
Mendeley	101	27.7
ORCID	9	2.6
ResearchGate	198	54.3
SCOPUS	34	9.3
Semantic Scholar	9	2.6
Web of Science	9	2.6
World Cat	9	2.6
Semantic Scholar	7	1.9

*Multiple responses used

The online databases accessed most by the respondents are Google Scholar (79.2%), ResearchGate (58.4 %), JSTOR (55.3 %), Science Direct (48.2 %), Directory of Open Access Journals (43.8 %) and EBSCOHost (39.5 %). Among these mostly accessed online research databases, only Science Direct requires full subscription while JSTOR and EBSCOHost are partly free; others are completely free.

Table 2: Use of Information, Motivation and Source Internet Access to Online Database

Access of Database		Frequency*	Percent
Information used for	Assignment	303	83.0
	Development of dissertation	323	90.2
	Preparation of journal article	111	31.0
	Conference paper	49	13.7
	Help a friend	45	12.6
Motivation	Free contents	337	93.6
	Contains research materials relevant to my research	279	77.5
	University library subscription	116	32.2
	Recommended by a friend	153	42.5
Source Internet access	University virtual library	102	28.7
	Personal data	328	92.4
	Institution-based internet	164	44.9
	Cybercafé	210	57.5
	Assistance from friend/classmate	58	16.3

*Multiple responses used

The respondents' use of the information accessed from the online databases, what informed their choice of database to access and means of internet/network to access the online databases were summarized in the multiple response analysis in Table 2. Most of the postgraduate students use the information obtained from the accessed databases to development their postgraduate dissertation/thesis (90.2 %) and to do their assignments (83.0 %). Only 31.0 percent utilize the online resources for journal article preparation while 13.7 % use it for conference papers. What motivated the postgraduate students (93.6 %) most to access a database is because the online contents are free. This explains why the databases accessed by most of the students are available for free or partly free. Another major motivating factor for most of the postgraduate student (77.5 %) is that the database contains

research materials relevant to their research needs. These results corroborate the findings of Shaqour and Daher (2010) and Kwadzo (2015). Subscription by the university's library to the databases was the least motivating factor for the postgraduate students (32.2 %). Interactions with some of the postgraduate students during the survey revealed that most of the universities' libraries do not subscribe to relevant databases or subscriptions have not been renewed for a long time. That is why most of the students rely on free online databases for their research materials.

Information on the postgraduate students' sources of internet access for online research resources revealed, as shown in Table 2, that personal data is the major source of internet access to most of the respondents (92.4 %). Other sources of internet access for some of the students are institution-based internet provision (44.9 %) and Cybercafés (57.5 %). During personal conversations with some of the postgraduate students on the course of the survey, some of them lamented weak, unstable and slow internet network from the university's internet facilities. The students disclosed that these have seriously affected their ability to access highly needed research materials online for their assignments and dissertations. The students admitted that they spend a lot of money on data and cybercafés to access online research materials from the databases. The problem of unstable internet network in the universities also affected the universities' virtual libraries, making them often frustrating and unreliable to use for research. These findings support the works of Aina (2014).

Evaluation of the influence of some factors on the regularity of access of online research databases by the postgraduate students was performed using the binary logistic regression method. The model adequacy statistics for the binary logistic regression analysis are presented in Table 3. The binary logistic regression test was performed at 0.05 level of significance for the significance of the overall model, the goodness-of-fit test and the

predictor variables. The Omnibus test of model coefficient gave a Chi-square value of 58.209 and p-value of 0.004 at 11 degrees of freedom (df). Since the p-value is less than the level of significance ($p < 0.05$), it implies that the overall binary logistic regression model which contains the binary dependent variable and the eleven predictor variables is statistically significant and therefore suitable for predicting the regularity of access of online databases. The Hosmer-Lemeshow statistic tests the null hypothesis that predictions made by the model fit perfectly with observed group memberships; a goodness-of-fit test. The Chi-square result, comparing the observed frequencies with the expected have value of 2.496 with p-value of 0.962 at 8 degrees of freedom. The p-value being less than 0.05 shows that the chi-square is insignificant and indicates that the data fits the model well. The Nagelkerke R-square usually have lower value than the R-square in multiple regression but interpreted the same manner. With the Nagelkerke R-square having a value of 0.472 implies that the model explained 47.2 % of the variations in regularity of access of online databases by the postgraduate students.

Table 3: Summary of Logistic Regression Model Adequacy Statistics

Test	Chi-Square	df	P-value
Omnibus	58.209	11	0.004
Hosmer-Lemeshow	2.496	8	0.962

Nagelkerke R Square = 0.472

Presented in Table 4 are the results of the binary logistic regression analysis of the factors which predict the regularity of access and use of online databases for academic research among the postgraduate students of the six foremost universities in Nigeria. The Wald statistic (see column 4) was used to ascertain the statistical significance of each of the independent variables in the model. The significant independent variables are the factors that influence the regularity of access to online databases by the postgraduate students. From the table, it could be seen that sex (0.037), degree in-view (0.009), free access (0.038), finance (0.000), personal laptop, smartphone (0.001), and helpfulness of the research materials

significantly predicted the regularity of access and use of online research databases by the postgraduate students. Other factors such as age, sponsorship, quality of research materials, adequate ICT infrastructure, and ICT assistance do not significantly predict the regularity of access to online databases. Furthermore, sex, degree in-view and helpful were treated as categorical variables and the numbers in brackets indicate the category significantly influencing the dependent variable more than the other categories. These findings were also revealed by Eiriemiokhale (2019). Considering the values of Exp(B), it implies that male postgraduate students (coded 1) are 0.963 times more likely to access online databases regularly than the females. The PhD students are 1.041 times more likely to access online databases more regularly than the postgraduate Diploma, M. Phil, Masters' and Masters/PhD students.

Table 4: Analysis of the Coefficients of the Logistic Regression Model

Predictor	B	S.E.	Wald	df	P-value	Exp(B)
Sex(1)	-0.038	0.227	4.028	1	0.037	0.963
Age	0.007	0.010	0.514	1	0.473	1.007
Degree in-view(5)	0.041	0.092	6.195	1	0.009	1.041
Sponsorship	0.178	0.118	2.288	1	0.130	1.195
Quality of research materials	0.141	0.101	1.947	1	0.163	1.151
Free access	-0.028	0.084	5.112	1	0.038	0.972
Adequate ICT infrastructure	0.110	0.097	1.280	1	0.258	1.116
ICT assistant	0.077	0.090	0.726	1	0.394	1.080
Finance	0.125	0.111	10.257	1	0.000	1.133
Personal laptop, smartphone, etc.	0.062	0.104	0.358	1	0.001	1.064
Helpful	0.005	0.149	6.001	1	0.014	1.005
Constant	-1.828	1.037	4.109	1	0.041	0.161

S.E. is standard error for B, the variable coefficient

The data on the constraints to accessing and utilizing online databases by the postgraduate students for their academic works were evaluated with frequencies and percentages under multiple response analysis. The results are summarized in Table 5. The constraints identified in the study include: most needed research materials are not free (78.4 %); lack of sufficient finance to subscribe for needed research material (77.5 %); most of the databases relevant to the students' research needs are not subscribed to by the institution library (87.7 %); university internet is not strong and stable (71.8 %); inability to afford

internet data regularly for online access (84.7 %) and unstable electricity/power supply (61.4 %). Lack of printing facilities at the university library was considered the least constraint to accessing online databases for academic research by the postgraduate students. Akinola et al. (2018) obtained similar constraints to accessing online databases.

Table 5: Constraints to Accessing Online Research Database

Constraint	Frequency*	Percent
Most of the materials I need are not free	286	78.4
I do not have sufficient finance to subscribe for the materials I need for my research	283	77.5
The school library does not subscribe to most of the databases relevant to my field	320	87.7
The university internet is not strong and stable	262	71.8
I cannot afford data regularly to access online materials for my research	309	84.7
Unstable power supply	224	61.4
Lack of printing facilities	145	39.7

*Multiple response used

5. Conclusion

The study examined the access and utilization on online databases by the faculty education postgraduate students of the six foremost universities in Nigeria. Using multiple response technique, the opinions of the respondents were ascertained on the type of databases they usually access, the motivating factors, purpose for accessing the databases and the constraints undermining full utilization of the online databases for quality research returns. The analysis of the data revealed that the online databases accessed by most of the postgraduate students are Google Scholar, ResearchGate, JSTOR, Science Direct, Directory of Open Access Journals and EBSCOHost and most of them are fully or partly free. The respondents were motivated mostly by the free access to most of the databases and because the databases contain information relevant to their research interest. Also, the students used the accessed documents mainly to develop their postgraduate dissertation/thesis and do their assignments.

The logistic regression analysis revealed that sex, degree in-view, free access, finance, personal laptop and Smartphone, and helpfulness of the research materials are the factors which significantly predict the regularity of access and use of online research databases by the postgraduate students. Moreover, the male postgraduate students are more inclined to access the online databases more regular than the female students. The same goes for the PhD students for the degree in-view. However, the major constraints to accessing the online databases by the students are that most needed research materials are not free; lack of sufficient finance to subscribe/purchase needed research material; most of the databases relevant to the students' research needs are not subscribed to by the institution library; university internet is not strong and stable; inability to afford internet data regularly for online access and unstable electricity/power supply.

In conclusion, it is recommended that sufficient efforts be made by the various university libraries to subscribe to notable online databases for enhance the access of the postgraduate students to research materials relevant to their research activities. Also, the university administrations should endeavour to upgrade the speed of the institution-based internet. This will reduce the burden of buying internet data by the students in order to access online databases for their research.

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