Perceived Effect of Open Access Institutional Repositories on the Research Activities of Academic Staff in Some Selected Federal Universities in North-East Nigeria

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Abstract

The study examined the perceived effect of open-access institutional repositories on the research activities of academic staff in some selected federal universities in North-East Nigeria. It adopted a survey design using three (3) federal universities in three (3) States of the zone, purposively selected. Four null hypotheses were employed to guide the study. 363 academic staff were sampled from a total study population of 3,631 using the multi-stage sampling technique. Data was collected using a questionnaire. 363 copies of the questionnaire were distributed but 337 were returned.Mean and standard deviation were used to answer the research questions while t-test statistics were used to test the null hypotheses at a 0.05 level of significance. The study found a high level of awareness and a high extent of utilization of OAIRs. It also revealed numerous perceived effects of OAIRs on the academic staff's research activities, with different strategies for enhancing the functionality of OAIRs in federal universities in North-East Nigeria and beyond. However, based on the findings, the study recommended that the National Universities Commission should intensify efforts in organizing seminars, workshops, and symposiums on the issue of OAIRs and ways in which academic staff can utilize and enjoy its usefulness.

Keywords: Institutional Repositories**,** OAIRs, Universities, Research, Effects

Introduction

The availability and utilization of information resources play a vital role in the professional career, research, and teaching activities of academic staff in the university. One of the carriers of information resources that is readily available to academic staffis the open-access institutional repository (OAIR). OAIR is described as digital collections meant to preserve the intellectual output of institutions of learning and provide access to scholarly materials without economic barriers (Shearer, 2017). According to Crow (2002), OAIR was coined by Scholarly Publishing for Academic Resources Coalition (SPARC), which defined it as a digital collection capturing and preserving the intellectual output of a single or multi-university community. Ezema (2011) opined that OAIRs are the most viable means of

ensuring the global visibility and impact of Nigerian scholarship as they give room for academic staff to distribute their work for use by colleagues within their immediate environment and beyond, and in addition, enhance improvement upon existing research work that might have been published. To this end, Salawu (2010) sees OAIRs as a means for bridging the information divide being experienced by developing countries of the world. However, Ejikeme and Ezema (2019) submitted that the growth of repositories in the country has been slow, and the dominant contents of the repositories are journal articles, theses, and dissertations.

Consequently, The United Nations Development Programme (UNDP, 2011) revealed demographic variables that may influence and predict the use of ICT resources, such as institutional repositories by individuals to include gender, income, level of education, skills, and age. However, for academic staff to make use of OAIRs, they must understand and have access to it. The ease of accessibility and retrieval would determine if anacademic staff would use the resource or not. Similarly, Nunda and Elia (2019) investigated the association between gender and institutional repository usage by postgraduate students in selected Tanzanian higher learning institutions and revealed that female respondents were using institutional repositories more than their male counterparts. This is contrary to the result of the investigation by Eiriemiokhale (2019) on the influence of gender on the utilization of electronic databases by university lecturers in the South-west, Nigeria in which no significant difference existed between the mean rating of the male and female lecturers in the usage of electronic databases. This implied that the male and female lecturers did not differ in their usage of electronic databases. The study also showed that gender was not a predictor of electronic database usage. Zhu (2017) in his study on who supports open-access publishing investigated gender differences in the use of OA publishing and showed that there were significant gender differences in the use of OA publishing. In general, men were more likely to have experience using both Gold and Green OA publishing compared to women. Furthermore, Gor (2017) examined the influence of gender on the utilization of online digital repositories by distance learners at the University of Nairobi, Kenya, and reported a significant relationship between learner's gender and the use of online digital repositories.

Additionally, it is appalling to know that the state of OAIRs in most universities in Nigeria is not encouraging as it cannot be compared with their foreign counterparts. This is a result of several bedeviling factors affecting the adoption and use of the repositories by major stakeholders coupled with non-awareness of its perceived usefulness and effect. Odell et al. (2017) noted that academic staff of universities and librarians who are considered information taxonomists in the academic environment still find it very difficult to live up to such expectations because most of them exhibit attitudes that hinder their participation in the business of OAIRs as well as its utilization. Academic staff also grapple with how to manage the digital intellectual output they produce even when technology has made it easy to create, store, and access digital material. Recognizing the importance attached to open access for resource sharing among academics over the years, the National Universities Commission (NUC) and scholars alike have advocated the need for an OAIRs policy to encourage intellectuals in respective Nigerian institutions of learning and research to develop a culture

of knowledge development, and sharing through institutional repositories (IRs) (NnadozieandChukwueke, 2016; Mommoh et al., 2022; PosighaandIdjai, 2022). By so doing, the enhancement of quality research for national development would be achieved. In this regard, NUC provided for all universities in the country to recognize the significant benefits of OAIRs in increasing the visibility of, and accessibility to their publications, which provides unrestricted, online access to all published articles and publications emanating from the respective institutions (NUC, 2007). Furthermore, Ezema and Eze (2024) noted that with the current number of universities in Nigeria, there ought to be corresponding research outputs over the years considering the number of graduates who would have submitted theses and dissertations, journal and book publications from faculty staff who require them for their promotion; among other forms of research reports.

Nonetheless, every research finding aims at supporting the overall development of any given society. Equally, attitudinal factors and other unknown factors should not be seen as hampering the dissemination of new knowledge that other research findings can build upon. OAIRs should be seen as tools that play a complementary role in scholarly work. Shuttleworth (as cited in Clare, 2019) asserts that the ultimate aim of the research is to generate measurable and testable data, which could add to the accumulation of human knowledge. One may ask, what benefit would research findings be if access to such results of findings could be hindered due to certain factors? Based on this background, there is a need, therefore, to investigate the perceived effect of OAIRs on the research activities of academic staff in some selected federal universities in northeast Nigeria.

Statement of the Problem

Open Access Institutional Repositories are important research resources for all cadres of faculty. They are becoming the tools for promoting academic research work by centralizing, preserving, and providing open access to knowledge generated by and within academic institutions. This hurts the visibility and impact of research output, and further improves the internal communication within the university, thereby serving as a tangible indicator of a university's quality preservation and dissemination of scholarship output.

Access to scholarship output is essential for the sharing of knowledge to enhance national development. Scholarly outputs in higher institutions of learning should play a vital role in achieving set goals of their existence, and there should not be any hindrance for whatever reason that could deter academic staff from having access to vital findings that promote scholarship in its entirety. Preliminary investigation showed that there is a significant impact of institutional repositories on academic institutions in sharing their intellectual output and having access to other information, effectively and efficiently. However, the platform is often neglected or partially adhered to in some of the higher institutions of learning in Nigeria. While some institutions in the nation indicate 'Open Educational Resource (OER)' in their portals, nothing of value can be found in the portal. If this is the case, it would be assumed that the observed effect of the IRs will be defeated. This could either be a result of the academic staff, not aware of the essence of utilizing their

institutions' repositories to make their research outputs to be freely accessible by their colleagues and other users within and beyond the borders of their institutions, or there may be other hindrances.

Additionally, the constant decline in the quality of research conducted by academic staff of Nigerian universities due to the concept of 'publish or perish' as well as the absence of functional institutional repositories in most institutions of higher learning is a major concern as the two can negate the essence of research and development (R&D) and proficiency of the academic staff. Given that academic researches form the central mandate of universities and the numerous perceived benefits/effects of OAIRs on the research activities of researchers, especially the university academic staff and authors/writers, it becomes imperative to investigate the perceived effect of open access institutional repositories on the research activities of academic staff in some selected federal universities in North-East, Nigeria.

Research Questions

RQ1: What is the level of awareness of academic staff about OAIRs in some selected federal universities in North-East Nigeria?

RQ2:To what extent do academic staff in some selected federal universities in North-East Nigeria utilize OAIRs in their institutions for research activities?

RQ3:What are the perceived effects of OAIRs on the research activities of academic staff in some selected federal universities in North-East Nigeria?

RQ4: What are the strategies for enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria?

Research Hypotheses

The following null hypotheses were tested at a 0.05 level of significance

HO1: There is no significant difference in the mean response of male and female academic staff on the perceived effects of OAIRs on the research activities of academic staff in some selected federal universities in North-East Nigeria.

HO2: There is no significant difference in the mean responses of male and female academic staff on strategies for enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria.

Review of Related Literature

The need for the establishment of OAIRs is put forward as a means to serve as a criterion for measuring the quality of a university through the quality and quantity of research output (Ezema, 2011). IR in any university is a medium through which brilliant research can be applied in moving society forward socio-economically and technologically, which has

hitherto lost its relevance. These researches can be ascertained and adequately made public from the ivory towers, thereby, helping in evaluating the university's total output for the benefit of different segments of the society for the parties concerned (Anenene et al.,2017). It is essential to make the intellectual output of a university available and freely accessible for use. This will not only provide visibility of intellectual output for measuring quality and reputation but it will equally help in increasing the frontier of knowledge, hence researchers will find such resources as a viable means of building upon existing knowledge for the development of society (Chuang and Cheng, 2010).

Similarly, Van Westrienen and Lynch (2005) noted negative attitudes and low academic staff participation in their university repositories due to confusion and uncertainty about intellectual property issues, as well as the perception of open access content being of low quality because it seems the near-term driver in most countries for institutional repositories appears to be open access. A report released by The Office of Scholarly Communication at the University of California and the California Digital Library eScholarship program released in August 2007 as contained in Yang and Li (2015) holds that the issue of unawareness of the existence of IRs has always aroused poor and negative attitude of academic staff towards participation in IRs as only a few percentages of these academic staff, who are aware and know little about the IRs seemed to be involved in publishing their articles in the repository. Additionally, Hahn and Wyatt (2014) found out that most academic staff were unaware of IRs in their local institutions as well as ignorant of OA journals. Hence, would not want to be part of depositing their research to the IRs of their institutions. Some of these academic staff also perceived OA journals were less prestigious and of lower quality thereby, becoming afraid that publishing in OA journals could affect their scholarly reputation instead of adding value to their career (Hahn and Wyatt, 2014). Discussing the challenges of IR in Nigeria, Nwokedi and Nwokedi (2018) outlined the way forward. These include but are not restricted to: the need for conferences and capacity-building workshops to educate and train stakeholders in academics.

In another development, Ivwighreghweta (2012) reveals that the International Institute of Tropical Agriculture (IITA) in Nigeria at a time had to relocate servers to the United Kingdom at the final stage of developing its institutional repository mainly as a result of the nature of the power supply in Nigeria. Equally, in 2001, the National Universities Commission (NUC) in Nigeria relocated its server to the United Kingdom to create a central digital repository for assisting Nigerian universities in electronic resources acquisition to supplement resources available in individual university libraries. Relocation of the server to a more robust power supply location is viewed as another way forward to achieving OAIR development. From thence someone can receive a positive effect on his or her research activities. Nonetheless, much has been said about IRs both as a process of advocating for its establishment, its challenges, and the way forward. However, to the best of the knowledge of the researcher and team members, nothing has been done about the perceived effect of OAIRs on the research activities of academic staff in federal universities in North East Nigeria, thereby, leaving a strong gap in the literature, which ought to be filled, hence, the need for the present research.

Research Method

The study was carried out in the Northeast geopolitical zone of Nigeria using a descriptive survey design. The population is 3,631which comprised all academic staff in the three (3) federal universities selected, viz; The Modibbo Adama University (MAU) Yola, Adamawa State; Federal University, Kashere (FUK) Gombe State; and Federal University, Wukari (FUW), Taraba State. Furthermore, a sample of 343 (159 for MAU, 113 for FUK, and 91 for FUW), representing 10% of the study population was used. These academic staff were selected using multi-stage sampling techniques. In the first stage of sampling, three (3) federal universities in northeastNigeria were sampled, using the purposive sampling technique. In the next stage, academic staff were sampled from each of the three (3) universities using the proportionate sampling technique. In the last stage, a sample of 159 for MAU, 113 for FUK, and 91 for FUW academic staff were selected to make up the 363-sample size, using a simple random sampling technique. The instrument for data collection was a 52-item structured questionnaire titled: Effect of Open Access Institutional Repositories on the Research Activities Questionnaire (EOAIRsRAQ). The instrument was validated by five experts: three from the Department of Library and Information Science, and two from Measurement and Evaluation, all in Taraba State University, Jalingo. The reliability of the instrument was tested on 50 academic staff at the Taraba State University, Jalingo, Nigeria. Cronbach alpha was used to analyze their responses which yielded a coefficient of 0.84. Data were collected with the help of three (3) research assistants. A total of 363 copies of the questionnaire were distributed but 337 were returned, giving a 92.8% response rate. Mean and standard deviation were used to answer the research questions while t-test statistics were used to test the hypotheses at a 0.05 level of significance. In the decision rule, a criterion mean of 2.50 was used to determine the degree of agreement or disagreement with the item and was used in research questions 3 and 4. This is to say that any item that has a mean score of 2.50 and above was considered as agreed while items with mean scores below 2.50 were considered as disagreed. Furthermore, research questions 1 and 2 were answered using the real limit of numbers as shown herein: 1.00 - 1.49 - VLE/VLA; 1.50 - 2.49 - HE/HA; 2.50 - 3.49- HE/HA; 3.50 - 4.00- VHE/VHA. Additionally, all the null hypotheses were tested at a 0.05 level of significance using t-test statistics. Hence, where the p-value was less than 0.05, the null hypothesis was rejected. But where the p-value was greater than 0.05, the null hypothesis was accepted

Results and Findings

The results of the descriptive, inferential analysis and text of hypotheses were presented in Tables as follows.

Research Question 1: What is the level of awareness of academic staff about OAIRs in some selected federal universities in North-East Nigeria?

Reports on *Research Question 1* are presented in *Table 1*

Table 1: Mean and standard deviation of responses by academic staff on the level of awareness of academic staff about OAIRs in some selected federal universities in North-East Nigeria

Item Statement	$\bar{x}$	SD	Decision
I am aware of the existence of OAIRs in my university	2.66	.909	**HA**
I have the consciousness that I can deposit my articles in the OAIRs	2.66	.886	**HA**
I am mindful that I can search for information in the OAIRs	2.82	.862	**HA**
I know I can conduct research using the OAIRs	2.75	.849	**HA**
I understand I can refer people to our OAIRs	2.73	.988	**HA**
I know OAIRs is the key to academic progression	2.70	.923	**HA**
I am aware OAIRs can help in developing my writing skills	2.64	.817	**HA**
I am aware that OAIRs can provide a ready avenue to publish my articles	2.72	.913	**HA**
I am aware information about my university research work can be found in the OAIRs	2.69	.894	**HA**
I am alert that I can increase my visibility using the OAIRs	2.47	.886	**LA**
I am conscious that OAIRs offers round-the-clock research	2.52	.876	**HA**
I know I can engage in research seeking ways to promote the acceptance and use of OAIRs in my institution	2.64	.834	**HA**
I am aware I can go to the OAIRs when I have exhausted other options for conducting research	2.64	.804	**HA**
I am aware that publishing in the OAIRs is cost-effective.	2.31	.930	**LA**
I am aware that publishing in the OAIRs is very easy.	2.36	.914	**LA**
Cluster Mean	**2.62**	**.886**	**HA**

Key: $\bar{x}$ – Mean; SD – Standard Deviation; HA – Highly Aware; LA – Low Awareness

Table 1 displays data from responses by academic staff in some selected federal universities in North-East Nigeria on their level of awareness of OAIRs. There are fifteen (15) item statements concerning different aspects of OAIRs. The result reports a high level of awareness by a majority of the respondents about OAIRs as it accounts for a cluster mean of 2.62 with a standard deviation (SD) of .886. However, the reason for the high awareness response is that the cluster mean falls within the real limit region of highly aware as presented in the methodology section.

Research Question 2: To what extent do academic staff in some selected federal universities in North-East Nigeria utilize OAIRs in their institutions for research activities?

Reports on *Research Question 2* are presented in *Table 2*

Table 2: Mean and standard deviation of responses by academic staff on the extent to which academic staff in some selected federal universities in North-East Nigeria utilize OAIRs in their institutions for research activities

Item Statements	$\bar{x}$	SD	Decision
I deposit my intellectual works in the OAIR of my institution	2.54	.917	HE
I often insist that people under me publish in the OAIRs	2.36	.908	LE
I always use the OAIRs during my research	2.52	.907	HE
I frequently use the OAIRs to search for full-text articles	2.56	.879	HE
I constantly cite works published in the OAIRs during my research	2.63	.925	HE
I help others to deposit their work in the OAIR of my institution	2.54	.883	HE
I am involved in using our OAIRs to promote my institution's visibility	2.48	.909	LE
Cluster Mean	**2.52**	**.904**	**HE**

Key: $\bar{x}$ – Mean; SD – Standard Deviation; LE – Low Extent; HE – High Extent

Table 2 shows the responses of the academic staff on the extent to which they utilize OAIRs for their research activities. There are seven (7) item statements concerning different uses of OAIRs. The overall result with a cluster mean of 2.52 and standard deviation (SD) of .904 shows that a majority of the respondents rated their utilization of OAIRs for research activities in their institutions to a high extent. This is a result of the cluster mean falling within the region of High Extent ($\bar{x}$ = 2.50-3.49).

Research Question 3: What are the perceived effects of OAIRs on the research activities of academic staff in some selected federal universities in North-East Nigeria?

Reports on *Research Question 3* are presented in *Table 3*

Table 3: Mean and standard deviation of responses by academic staff on the perceived effects of OAIRs on the research activities of academic staff in some selected federal universities in North-East Nigeria

Item Statements	$\bar{x}$	SD	Decision
OAIRs makes my research visible	3.21	.762	**Agreed**
It provides an avenue for archiving my articles in the OAIRs	2.92	.795	**Agreed**
It makes information searching very easy	2.99	.811	**Agreed**
It provides an avenue for me to conduct my research	2.92	.819	**Agreed**
Retrieving information from the OAIRs is very easy	2.95	.816	**Agreed**
OAIRs help in my academic progression	2.95	.750	**Agreed**
OAIRs helps in develop my writing skills	2.93	.824	**Agreed**
It provides a ready avenue to publish my articles and earn marks	2.84	.843	**Agreed**
It assists me in obtaining information about my university research work.	3.02	.779	**Agreed**
OAIRs attract scholarship to me	2.69	.856	**Agreed**
It provides access to scholarly research	2.78	.821	**Agreed**
With the OAIRs, I do not need to pay to download articles for my research	2.76	.812	**Agreed**
Using the OAIRs helps me discover research areas	2.94	.811	**Agreed**
The cost of publishing in OAIRs is low	2.63	.873	**Agreed**
It makes research publishing very easy	2.63	.856	**Agreed**
Cluster Mean	**2.88**	**.815**	**Agreed**

Key: $\bar{x}$ – Mean; SD – Standard Deviation

Table 3 shows data from responses by academic staff on the perceived effects of OAIRs on their research activities. There are fifteen (15) item statements covering responses on the perceived effects of OAIRs. The result reports a total agreement by a majority of the respondents to all the item statements as it accounts for an average cluster mean score of 2.88 with a standard deviation (SD) of .815. However, the reason for the agreement response is that the average cluster mean surpasses the criterion mean of 2.50 set for this study.

Research Question 4: What are the strategies for enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria?

Reports on *Research Question 4* are presented in *Table 4*

Table 4: Mean and standard deviation of responses by academic staff on the strategies for enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria

Item Statements	$\bar{x}$	SD	Decision
Organization of seminars on OAIRs to provide academic staff knowledge of OAIRs by the university bodies and other authorities concerned.	3.42	.662	Agreed
Creating proper awareness of the existence of OAIRs in various institutions by the university authorities	3.28	.769	Agreed
The government and other concerned bodies should provide adequate financial support for academic staff to go into research that will encourage publishing through OAIRs.	3.45	.650	Agreed
Management of OAIRs in various institutions should ensure the provision of submission guidelines for depositing in OAIRs.	3.22	.702	Agreed
University Appraisal Committees (UACs) and other faculty assessment bodies should ensure that articles published in the OAIRs are rated high during the promotional assessment of faculty.	2.97	.882	Agreed
University Management, UACs, and faculty board should make publishing in the OAIRs one of the criteria for assessing academic staff for promotion.	2.92	.943	Agreed
Providing an easy guide for self-archiving, if adopted, should be ensured by the Management of OAIRs	3.07	.734	Agreed
University authorities and other concerned bodies should provide incentives for the highest published academic staff in the OAIRs.	3.21	.767	Agreed
University authorities and Management of OAIRs should always promote articles published in the OAIRs and make them visible as a means of encouraging others to publish in OAIRs	3.10	.806	Agreed
OAIRs authorities and bodies in charge of OAIRs should ensure regular updating of OAIRs sites (websites)	3.23	.825	Agreed

Promotion of copyright should be held in high esteem by OAIR managing bodies and other authorities.	3.16	.801	Agreed
Providing a strong guide against plagiarism in OAIRs by restricting downloading or copying of contents from the OAIRs should be ensured by OAIRs managing bodies and university authorities.	3.15	.807	Agreed
Provision of adequate technical support to ensure continuity should be ensured by the government, university authorities, and other concerned stakeholders	3.30	.733	Agreed
Nigerian University Commission (NUC) should adopt the system of using the institution's OAIRs as a criterion for ranking them (the institution).	3.07	.856	Agreed
OAIRs regulatory and management bodies should ensure that intellectual outputs go through peer review before publishing them in the OAIRs.	3.22	.777	Agreed
Cluster Mean	**3.18**	**.781**	**Agreed**

Key: $\bar{x}$ – Mean; SD – Standard Deviation

Table 4 presents the data of the responses from the academic staff on the strategies for enhancing the functionality of OAIRs. The result reports a total agreement by a majority of the respondents on the strategies for enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria as it accounts for an average cluster mean score of 3.18 and a standard deviation (SD) of .781. However, the reason for the agreement response is due to the average cluster mean being within the agreement region (where the mean ≥ 2.50).

Text of Hypotheses

Hypothesis 1: There is no significant difference in the mean responses of male and female academic staff on the perceived effects of OAIRs on the research activities of academic staff in some selected federal universities in North-East Nigeria.

The data for testing *Hypothesis 1* are presented in *Table 5*

Table 5: t-Test analysis of the mean responses of academic staff of selected federal universities on the perceived effects of OAIRs on the research activities of academic staff in some selected federal universities in North-East Nigeria**.**

Institution	N	Mean	Std. Deviation	Df	t-value	sig	Decision
Male	188	2.93	.60	335	1.82	.07	Accept H_O
Female	149	2.82	.46				

df= degree of freedom, N – Number of respondents, Correlation is significant at the 0.05 level (2-tailed)

Data in Table 5 shows a p-value of .07 which is greater than the alpha value of .05. Therefore, there is no significant difference between the mean responses of male and female academic staff on the perceived effects of OAIRs on the research activities of academic staff in some selected federal universities in North-East Nigeria. Therefore, the hypothesis of no significant difference between the mean responses of male and female academic staff on the perceived effects of OAIRs on the research activities of academic staff in some selected federal universities in North-East Nigeria was not rejected.

Hypothesis 2:A significantdifference does not exist in the mean responses of male and female academic staff on strategies for enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria.

The data for testing *Hypothesis 2* are presented in *Table 6*

Table 6: t–Test analysis of the mean responses of the academic staff of selected federal universities on the strategies for enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria**.**

Institution	N	Mean	Std. Deviation	Df	t-value	sig	Decision
Male	188	3.19	.56	335	0.49	.63	Accept H_O
Female	149	3.17	.43				

df= degree of freedom, N – Number of respondents, Correlation is significant at the 0.05 level (2-tailed)

Data in Table 6 shows a p-value of .63 which is greater than the alpha value of .05. This means that there is no significant difference between the mean responses of male and female academic staff on strategies for enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria. Therefore, the hypothesis of no significant difference between the mean responses of male and female academic staff on strategies for enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria was not rejected.

Discussion of Findings

The findings of this study revealed that there is a high level of awareness about OAIRs in the selected federal universities in the North-East geopolitical zone of Nigeria. This finding confirms the result of a previous study which reported a high level of awareness of OAIRs among academic staff in universities (Bamigbola and Adetimirin, 2017). These findings also agree with the submissions of Yang and Li (2015) who found that some academics subscribed to OAIRs, in terms of awareness, utilization, and participation.However, the findings disagree withotherstudies that founda low awareness level and the need to improve upon awareness creation (Claire et al., 2013; DhanavandanandTamizhchelvan, 2015; Adam andKaur, 2019).

Secondly, the finding of the study revealed a high extent of utilization of OAIRs by academic staff in the selected federal universities in the northeast of Nigeria stemming from the fact that the majority of these academics do contribute through different means to the issue of OAIRs in their institutions. Consequently, when this extent of utilization isput to the test, the result may be overwhelming as it will see the major stakeholders in the business of the OAIRs utilizing it immensely. With this, the chance of achieving positive results through the OAIRs is inevitable. Contrarily, the study of VanWestrienen and Lynch (2005);Aghwotu and Ebiere (2016);and Hahn and Wyatt (2014), which reported negative attitudes and low academic staff participation and utilization in their university repositories was attributed to confusion and uncertainty about intellectual property issues, as well as the perception of open access content being of low quality. This is because it seems the near-term driver in most countries for institutional repositories appears to be open access, hence, they would not want to be part of depositing their research to the OAIRs of their institutions. Besides, the finding of the present study could be a true reflection of the fact that the high extent of utilization recorded is not far from the fact that these academic staff in the studied area are aware of OAIRs and manifest a certain positive attitude towards them. Based on this, the present study agrees with the submissions of Ammarukleart (2017), Bamigbola, and Adetimirin (2017) that the majority of the lecturers accessed materials from IRs on a daily and weekly basis while they deposited their works into IR on annual and bi-annual basis.

Thirdly, there are numerous perceived effects of OAIRs on the research activities of academic staff of selected federal universities in North-East Nigeria. To this end, the assumption that OAIRs are not a wasted priority or an avenue for universities to lavish their limited resources could be better ascertained and appreciated as contrary to what some scholars have exhibited as fear towards the establishment and maintenance of OAIRs in public universities. Besides, there is no significant difference between the mean responses of male and female academic staff in someselected federal universities on these perceived effects. On this point, therefore, the findings of earlier studies are well corroborated. For example, Bamigbola and Adetimirin (2017) indicate that the use of the repositories to prepare lecture notes and research works was among the perceived effects of the repositories by staff. This study is also in tandem with the report that the majority of the respondents recognized the importance of the development of IRs for self-archiving and disseminating scholarly work and teaching materials; and to serve as a criterion for measuring the quality of a university through the quality and quantity of research output by the academic staff (Chuang andCheng 2010, Ezemam 2011; Ammrukleat, 2017). It suffices to say that OAIRs are essential as they provide an avenue for making the intellectual output of a university available and freely accessible for use. This will not only provide visibility of intellectual output for measuring quality and reputation but it will equally help in increasing the frontier of knowledge, hence researchers will find such resources as a viable means of building upon existing knowledge for the development of the society.

Regarding the strategies for enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria, this study has shown different ways. Such ways can also serve as remedies to the challenges facing the institutional management in the

operation of OAIRs in North-East Nigeria. Of course, this study has shown no significant difference between the mean responses of male and female academic staff on strategies for enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria, as the ways of handling OAIRs remain the same. With this, the scholars that found seminars, creating awareness, adequate financial support, the incentive to highest published academic staff, promoting articles published in OAIRs, policy implementation, and ensuing intellectual outputs go through peer review before publishing in OAIRs (Bethesda in Brown et al, 2003; Nwokedi and Nwokedi, 2018; Adam and Kaur, 2019; and Rieger, 2008) as effective strategies for enhancing the functionality of OAIRs in universities are well supported by the findings of this work. Nonetheless, it is worthy of note that academic staff studied in this work find symposia, staff orientation, library programmes, engagement in research, management of OAIRs by experienced librarians, and educating academic staff about OAIRs as workable strategies to enhancing the functionality of OAIRs in some selected federal universities in North-East Nigeria. All these realities are remarkable and draw implications for this study. It is therefore, no doubt that the finding in this work has revealed and laid solid information with which the OAIRs' stakeholders should get hold of towards having sustainable OAIRs in the universities in the North-East of Nigeria and beyond.

Conclusion

Suffice it to say that OAIRs are no longer a novelty in the academic environment, especially in Nigerian federal universities. This might be the reason why most tertiary institutions are coming to terms with the establishment and proper management of OAIRs in their institutions. The importance, perceived effects, and usefulness of OAIRs have been revealed from different angles, which include assisting in making research and research output visible, providing an avenue for the academic staff and another category of users to archive their articles making information searching very easy as well as providing an avenue for effective and efficient researches.

Other importance of the OAIRs could be seen in the areas of enhancing academic and author's visibility, making for easy retrieval of information and research findings, helping users of them to develop efficient among other numerous benefits both to the authors, the researchers, the institution, and community at large. While the OAIRs are perceived as highly useful, the level of awareness and participation of the academics should not be considered a mirage or an issue of less concern. In addition, a preliminary survey has shown that adequate management and a positive attitude of academic staff play a great role in the functionality and utilization of the OAIRs. The result portrayed that where academic staff are not aware of the OAIRs; they were not utilized by these academic staff, either in depositing their research work or making use of the articles in the OAIRs for their research or academic work.

Consequently, in an attempt to meet the expectations of the students and academic staff most universities with OAIRs, have increased the size and quality of materials deposited in the OAIRs. The belief of most universities through some research papers is that not only

are there high effects and usefulness of OAIRs in universities, but their utilization by academic staff as well as their level of awareness would lead to their effective functionality of OAIRs. In any case, there was no empirical evidence that established the perceived effect of open-access institutional repositories on the research activities of academic staff in some selected federal universities in North-East Nigeria. This was why this study was conducted to ascertain the perceived effect of open access institutional repositories on the research activities of academic staff in some selected federal universities in the North-East geopolitical zone of Nigeria, which has shown great positive effects

Recommendations

Based on the findings and conclusions of the study, the following recommendations were made.

1. The authority and management of federal universities in Nigeria should intensify efforts in organizing seminars, workshops, and symposiums on the issue of OAIRs and ways in which academic staff can utilize and enjoy its usefulness.

2. University management should also intensify efforts in encouraging academic staff to engage in researchto have articles to deposit in the OAIRs. This is because the absence of research articles in the OAIRs mars its functionality and utilization.

3. The government and university authorities should make the establishment of OAIRs in all Nigerian universities, as well as attach incentives to academic staff depositing and making use of the OAIRs.

4. Management of OAIRs should draw up policies aimed at tackling the issues associated with open access and full-text databases (such as plagiarism).

5. Finally, TETFund should not only stop at ensuring the digitization of theses and dissertations but should ensure the deployment of funds by universities in managing their OAIRs.

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References

Aghwotu, T.P. andEbiere, E.J. (2016) Awareness and attitude of lecturers toward establishing institutional repository in Niger Delta University, Bayelsa State, Nigeria. *Information and Knowledge Management, 6* (6).http://www.iiste.org.

Anenene, E. E., Alegbeleye, G. B. and Oyewole, O. (2017). Factors contributing to the adoption of institutional repositories in universities in North West Nigeria:

Perspectives of library staff. *Library Philosophy and Practice* [e-journal] http://digitalcommons.unl.edu/libphilprac/1508.

Chuang, C. F. and Cheng, C. J. (2010) A study of institutional repository service quality and users' loyalty to college libraries in Taiwan: The mediating and moderating effects. *Journal of Convergence Information Technology*,5, 89-99.

Clare, H. (2019). An introduction to open access. Jisc*Quick guide.* Retrieved from: https://www.jisc.ac.uk/guides/an-introduction-to-open-access.

Crow, R. (2002). *The case of institutional repositories: A SPARC position paper.* Washington, DC: The Scholarly and Academic Resources Coalition. http//www.arl.org/sparc/IR/ir.html.

Dhanavandan, S. andTamizhchelvan, M. (2013) A critical study on attitude and awareness of institutional repositories and open access publishing. *Journal of Information Science Theory and Practice*, 1, 67-75. http://dx.doi.org/10.1633/JISTaP.2013.1.4.5.

Eiriemiokhale, K. A. (2019). Influence of demographic variables on the utilization of electronicdatabases by university lecturers in South-West, Nigeria. *Library Philosophy and Practice* (e-journal) 2683. http://digitalcommons.unl.edu/libphilprac/2683/

Ejikeme, A.N. and Ezema, I.J. (2019). The potentials of Open Access Initiative and the development of institutional repositories in Nigeria: implications for scholarly communications. *Publishing Research Quarterly*, 35: 6-21.http://doi.org/10.1007/s12109-018-09626-4.

Ezema, I. J. and Eze, J. U. (2024). Status and challenges of institutional repositories in university libraries in South-East Nigeria: Implications for visibility and ranking of Nigerianuniversities. *The Journal of Academic Librarianship*, 50(2). https://doi.org/10.1016/j.acalib.2023.102834

Ezema, I. J. (2011). Building open access institutional repositories for global visibility of Nigerian scholarly publication. *Library Review,60* (6), 473-485. https://doi.org/10.1108/00242531111147198.

Gor, P. O. (2017). Demographic and institutional factors influencing utilization of online library services by distance learners in the University of Nairobi, Kenya (PhD Dissertation, University of Nairobi, Kenya). erepository.unobi.ac.ke/bitstream/handle/11295/102108/Gor%2CPeter%20O_Demograp hic%20Institutional%20Factors%20Influencing%20Utilization%20of…

Hahn, S. E. and Wyatt, A. (2014). Business faculty's attitudes: open access, disciplinary repositories, and institutional repositories. *Journal of Business and Finance Librarianship, 19*, 93-113. http://dx.doi.org/10.1080/08963568.2014.883875

Ivwighreghweta, O. (2012). An investigation to the challenge of institutional repositories development in six academic institutions in Nigeria. *International Journal of Digital Library Services*,2(4). http://www.ijodls.in/uploads/3/6/0/3/3603729/vol-2_issue-4_1-16.pdf.

Merriam Websters College Dictionary (2014) *Merriam Webster incorporated* (11th ed.) Massachusetts,

Mischo, W. H. and Schlembach, M. C. (2011). Open access issues and engineering faculty attitudes and practices. *Journal of Library Administration,* 51 (5-6), 432-454. http://dx.doi.org/10.1080/01930826.2011.589349.

Mohammed, A. (2013). Institutional repository: An option for scholarly communication in Nigeria. *International Journal of Education and Research,*1(6), http://www.ijern.com/journal/June-2013/33.pdf

Mommoh, A.U, Oni, O, and Braimah, Y.J. (2022). Institutional Repository Policies in University Libraries in Africa. A Survey. *International Journal of Academic Library and Information Science,* 10(4), 159-170, https://doi.org/10.14662/ijalis2022130

National Universities Commission (NUC) (2007). Manual of Accreditation Procedures for Academic Programmes in Nigerian Universities (MAP), National Universities Commission, Abuja, Nigeria.

Nnadozie, C.O. andChukwueke, C.(2016). Institutional repositories as platforms for information provision and academic visibility for members of Nigerian university community. *In Proceedings of the Nigerian Library Association Abia State Chapter Annual Conference/Annual General Meeting held at Abia ICT Auditorium, Abia State Polytechnic, Aba, Abia State from 14-17, November 2016*

Nunda, I. M. and Elia, E. F. (2019). Institutional repository adoption and use in selected Tanzanian higher learning institutions. *International Journal of Education and Development Using Information and Communication Technology*, 15(1), 1-14. files.eric.edu.gov/fulltext/EJ12114269.pdf

Nwokedi, V. C. and Nwokedi, G. R. I. (2018). Open access institutional repositories in academic and research institutions in Nigeria: A review of benefits and challenges. *International Journal of Academic Library and Information Science,6*(8), 242-252. DOI: 10.14662/IJLIS2018.036.

Odell, J., Palmer, K., and Dill, E. (2017). Faculty attitudes toward open access and scholarly communications: Disciplinary differences on an urban and health science campus. *Journal of Librarianship and Scholarly Communication*, 5(General Issue), eP2169. http://dx.doi.org/10.7710/2162-3309.2169**.**

Posigha, E.B andIdjai, C.R (2022). A study of Institutional Repository Development, Policies and Challenges in University Libraries in Nigeria. *Niger Delta Journal of Library and Information Science*, 3(1), 26 – 38.

Rieger, O. Y. (2008). Opening Up Institutional Repositories: Social Construction of Innovation in Scholarly Communication. *Journal of Electronic Publishing 11* (3), [12-23]. http://dx.doi.org/10.3998/3336451.0011.301**.**

Salawu, B. A. (2010). Issues and challenges in the creation of institutional repositories with local content: Critical reflections. *Information, Society and Justice*, *3*(1), 59-68. https://core.ac.uk/download/pdf/36771605.pdf.

Shearer, K. (2017). Institutional repositories: Towards the identification of critical success factors. *Canadian Association of Information Science.* https://dspace.ucalgary.ca/handle/1880/43357

United Nations Development Programme (NDP. (2011). Promoting ICT for human development programme. A Pioneering Regional Human Development Report in Asia. http://www.apdip.net/projects/rhdr/resources/PDF on 15/08/2011

Van Westrienen, G. and Lynch, C. A. (2005). Academic institutional repositories: Development status in 13 nations as of mid-2005. *D-Lib Magazine, 11* (9). http://dx.doi.org/10.1045/september2005-westrienen

Yang, Z. Y. and Li, Y. (2010). University faculty awareness and attitudes towards open access publishing and the institutional repository: A Case Study. *Journal of Librarianship and Scholarly Communication, 3*(1), 1-30. jlsc-pub.org

Zhu, Y. (2017). Who supports open-access publishing? Gender, discipline, seniority, and other factors associated with academics open access practice. *Scientometrics*, 111, 557 – 579. link.springer.com/content/pdf/10.1007%2Fs11192-017-2316-z.pdf.