Full Length Research

ICT Skills as Determinant of Research Productivity of Librarians in Public University Libraries in North-East, Nigeria

[1]Dauda Bakum Adamu and [2]Prof. Yemisi Tomilola Babalola

[1]Department of Information Resource Management, Babcock University, Ilishan Remo, Ogun State, Nigeria.
Corresponding author's E-mail:dbadamuu@gmail.com
[2]Department of Information Resource Management, Babcock University, Ilishan Remo, Ogun State, Nigeria
E-mail: babalolay@babcock.edu.ng

The study investigated the influence of ICT skills on research productivity of librarians in public university libraries in North-East, Nigeria. Survey research design was used in this study. The population for this study is 361 academic librarians in fourteen (14) public university libraries in North-East, Nigeria. Taro Yammane formula (1967) was used to draw 190 sample size. Proportionate stratified sampling technique was adopted to proportionally allocate the 190-sample size to the fourteen university libraries based on their population stratum. Questionnaire is the instrument used for data collection in this study. 190 questionnaires were distributed to the respondents, out of which 165 (88,8%) were returned and found usable for this study. The data collected were analysed using Statistical Package for Social Science (SPSS) version 21. The data collected were presented using descriptive statistics such as frequency distribution, percentages, mean and standard deviation. Findings revealed that ICT skills (R^2 = 0.030, $F_{(1,163)}$ = 5.073, $p < 0.05$) had significant influence on research productivity of librarians. while the level of research productivity of librarians is very low (mean=1.93, SD=0,92) The findings also indicated that the level of ICT skills of librarians in the study area is high (mean=3.31, SD=0.69) The study concluded that Research productivity is an important indicator of librarians' performance in in the study area. The study recommended that Librarians should endeavor to collaborate in co-author publications, such as textbooks, journal articles, conference proceedings, monographs, book chapters and technical reports, especially as it affects the profession so as to further develop the profession and create more scholarly literature. This is in addition to training and re-training in the area of research skills to enhance their research productivity and necessary ICT facilities should be provided by the library management for adequate training on their use in order to sustain and improve upon the existing skills.

Keywords: ICT Skills, Research Productivity, Librarians, University Library

INTRODUCTION

Research is an important avenue for social, economic, industrial and technological development of any country. Globally, no nation can rise above the volume of its research. The developed nations such as America, China, Japan, Germany, Britain and France, attained their status through enormous investment in research and development. Consequently, The UNESCO Institute of Statistics (2018) reported the 2018 annual investment in research and development of the following countries spread across the continents of the world: United States

of America, $553 billion; China, $475 billion; Japan, $185.5 billion; and Germany, $116 billion. In Africa, Egypt takes the lead with $ 6.2 billion while South Africa, $ 4.8 billion. On the other hand, Mba and Okechukwu (2019) described Africa's research productivity and Nigeria in particular as abysmally low, representing less than one percent (1%) of the world's research productivity. Similarly, South Africa with twenty (20) universities had a research output of forty-seven thousand (47,000) publications, Egypt had thirty thousand (30,000) publications. While Nigeria's research productivity stood at only ten thousand (10,000) publications despite having over one hundred and seventy (170) universities, apart from Polytechnics, Colleges of education and research Institutes (Fonn, Ayiro, Cotton, Mbithi, Mtenje & Ezeh, 2018)

Research productivity is an index which refers to the publication of papers in professional journals in form of peer-reviewed articles, books, chapters in books as well as presentation of research papers in conference proceedings that are cited and acknowledged by experts in the field of study (Kpolovie & Dorgu, 2019). Similarly, Okonedo, Popoola, Emmanuel and Bamigboye (2015) defined research productivity as the quality and quantity of research published as textbooks, chapters in books, journal articles, conference and workshop proceedings, occasional papers, monographs, edited books, bibliographies, abstracts and indexes. Research provides the basis for knowledge that makes innovation and advancement in larger society, thereby creating social, economic, political, cultural and environmental impacts (Odeyimi, Bamidele & Adebisi, 2019).

In Africa, and Nigeria in particular, literature has shown that despite the abundant human and mineral resources, little attention is paid to research productivity even in universities. This perhaps might be one of the reasons why the global university ranking agencies scored Nigerian universities low (Times Higher Education, 2019). Research productivity is one of the major requirements in the career life of academic librarians, especially those working in universities. It is a fact that the quality and quantity of an institution's research is one of the indices of measuring its academic accomplishments and excellence. Thus, research productivity of academic librarian is valuable, because, the quality and quantity of their publications are the determining factors in their performance evaluation, promotions, tenure, research grants and salary increment. Research productivity is often used interchangeably with publication output, publication productivity or research output. Research productivity is often measured by the quality and often quantity of research published as textbooks, or chapters in books, journals articles, conference proceedings, monographs, book reviews, bibliographies, abstracts and indexes published. Other studies relating to research productivity have measured it in terms of high index citations, quality of research work and number of

publications. However, in this study, it is measured in terms of the number of publications, published locally or internationally.

Research provides an important background for librarians to become successful academics. It is a means through which academic librarians contribute to the existing body of knowledge. The productive works emanating from research are manifested in the form of journal articles, books, conference proceedings and many other productive works (Okonedo, 2015). In all these, it appears that publication is central to scholarly activity and recognition, a source of esteem, a requirement of individual's promotion, institutional excellence and visibility. Research productivity is needed for expansion of the frontiers of knowledge and solution to problems emanating from practice which ultimately improves the skills and status of the researcher (Aina, 2004). Research is crucial to the development of nations all over the world.

In Nigeria, most of these researches are carried out in different fields mainly by academic staff, including librarians in universities, because, it is an important yardstick for recruitment, promotion, rewards, recognition and resource allocation. Research productivity can have a beneficial impact on the local society (Jameel & Ahmad, 2020). The production of research comprises a broad variety of outputs: collections, technologies, databases, patents, books, and publications. Publications are significant aspect of academic staff success, because it is perceived as a measure of personal merit (Alaaraj, 2018). Librarians employed to work in Nigerian public university libraries have been accorded academic status similar to their teaching counterparts in the faculties. This was achieved during a negotiation which culminated into an agreement between the Federal Government of Nigeria and the academic staff union of Nigerian universities in 1993. Thus, all librarians with a Bachelor degree, master degree and PhD working as staff in the library enjoy academic status by virtue of their appointments, since research is one of the core mandates which academics must fulfil in order to progress. Thus, librarians are also under obligation to be productive in research and publication.

The importance of research to the development of library profession and librarians, particularly those working in academic environment cannot be over-emphasized. This is because research enhances quality of service, knowledge sharing and problem solving in response to changing times and environment (Ogbomo, 2010). Research is an important ingredient of human activity, because, it improves the quality of life of the citizenry by expanding the frontiers of knowledge, solving problems and addressing societal needs (Alzahrani, 2011). Consequently, Ejikeme (2011) lamented the low research productivity among librarians in Nigerian universities. In addition to that, Tsafe, Basaka and Mohammed (2016) conducted an analysis of research

productivity of librarians in sixteen (16) universities in northern Nigeria from 2000-2012. Findings of their study revealed that, one hundred and sixty-five (165) librarians produced only three hundred and seventy-three (373) publications within the period, which in their opinion is very low. This suggests the need to interrogate the factors responsible for under-productivity among librarians in public universities in North-East, Nigeria. Failure to conduct research by any librarian in Nigerian university may result to stagnation in the same rank which often times make them frustrated in the system. University libraries are strategic to the advancement of research and innovation. So, librarians are critical elements to the development and conduct of empirical research in order to find solutions to emerging challenges. However, to carryout research, information is needed, this information is largely stored in electronic format due to the influence of information technology. Hence, the need to acquire ICT skills in order to effectively utilize electronic information resources for their research.

Information and communication technology (ICT) has become an important tool for research, collaboration and innovation in the 21st century. It has enabled persons the opportunity to access information regardless of time or distance. In the same vein, it gives researchers a competitive advantage. In view of the fact that technological revolution has brought about information explosion and increase in information due to the advancement of ICT, librarians in universities therefore, need to develop skills, especially ICT skills and to have the ability to identify, search, retrieve, evaluate, organize and communicate information in electronic format so as to enhance their research productivity and to be able to compete with their peers in other countries in terms of research. Ukaegbu and Wegwu (2019) described ICT Skills as the abilities for the collection, effective processing, storing, transmitting and dissemination of information which enables the use of computers and related technologies in order to meet the goal seeking objective. Many librarians have poor basic knowledge of ICT skills as most universities in the country today lack both the personnel and the basic facilities for the teaching of computer. Some of those exposed to basic computer knowledge do not possess the requisite skill that could qualify them to be computer literate. ICT skill is the ability to use information technology tools like computer operating systems, software applictions such as SPSS, manage basic computer functions, and utilize social media.

Ability to use ICT tools could be helpful to researchers in accessing the needed information virtually and enhance communication of research findings among scholars. ICT Skills enable researchers to collaborate through the use of e-mail, social media, text messages. Similarly,ICT skilled person has the advantage of analyzing data electronically in carrying out his research.

Ayoku and Okafor (2015) opined that many librarians do have knowledge and skills of e-mail use and word processing but lack knowledge of search engines and directories other than Google or yahoo. However, the possession of ICT skills enhances research productivity in this digital era. The rapid growth and application of the Internet in education with the increasing growth in available information has called for a much wider understanding of the importance of ICT skills in the academic community and much more for academic librarians in Nigerian universities.

Basahuwa, Unegbu and Babalola (2020) investigated the influence of ICT Skills and job performance of librarians in public university libraries in North-Central, Nigeria. Survey method was adopted for the study and questionnaire was used as the instrument for data collection. The population of the respondents consisted of 282 librarians. Findings revealed that, there was significant influence of ICT skills on job performance of librarians. The study recommended among others that, stake holders and professional bodies such as The Librarians Registration Council of Nigeria (LRCN) and Nigerian Library Association (NLA) should strengthen plans on how to further develop librarians ICT Skills through training and re-training.

Ahmed and Sheik (2020) conducted a study on information and communication skills among library and information science professionals in Punjab, Pakistan. Survey research design was adopted for the study, while questionnaire is the instrument used for data collection. The population of the study was made up of all the librarians in University of Punjab, Pakistan. Findings of the study showed that, there was a high level of ICT skills competency among librarians. Information retrieval was relatively high compared to computer skills and information storage skills. It was concluded therefore that; ICT skills are prerequisite for better library services and the professional development of librarians.

Information and communication technologies which are used interchangeably with Information Technology are useful in this information era. The possession of ICT skills by librarians has tremendous benefits, ranging from routine duties such as users' registration to more complex ones such as cataloguing, digital institutional repositories and research procductivity such as information searching and other research tasks (Gakibayo, Ikoja-Odongo & Okello-Obura, 2013). For librarians to be up-to-date in this information age and as most of research resources can be accessed easily using Information Technology, librarians need to acquire Information and Communication Technology skills to enhance their research productivity. These skills include ability to use: basic computer operating devices, electronic databases and research tools. Librarians cannot fully exploit ICTs if they lack these basic skills. In a more recent study conducted by Lawal and Olawale (2020) on the impact of ICT skills on research productivity

of librarians in Bowen University, Osun State, South-West, Nigeria. Findings revealed that, research productivity of librarians was low, despite the fact that they use ICT tools for their research activities. The study recommended that; the respondents be trained to acquire ICT skills in order to be able to use new technologies to enhance their research productivity.

Research productivity is one of the requirements for career progression for all academic staff, including librarians in Nigerian universities. Despite the fact that research productivity is a major requirement for every academic librarian in public universities. scholars such as Tsafe, Basaka and Muhammed (2018) and Umar and Kabir (2018) in their studies have revealed that some librarians have not been measuring up in writing and publishing research works, particularly among those in public university libraries in Nigeria. Personal observation also showed a relative decline in research productivity among librarians working in university libraries, as some of them remained on the same rank for many years due to low publication output. The low level of research productivity of librarians ultimately results in stagnation on the same rank, frustration, low morale and poor visibility locally and internationally in their field of study. The Low level of research productivity is also evident in the 2021 global universities ranking, which used publication outputs of academic staff including academic librarians as one of the major criteria.

Perhaps the low level of research productivity of librarians in university libraries could be reversed and their productivity improved, if their level of ICT Skills is higher. Librarians also must acquire and apply high level of ICT Skills especially in today's world driven by IT and globalization, in order to navigate and access information available in electronic or digital format in order to enhance their research productivity (Lawal & Olawale, 2020). There is a dearth of literature on ICT skills and research productivity of librarians in the North-East, Nigeria. In the light of the above, this study investigated ICT Skills as determinant of research productivity of librarians in public university libraries in North-East, Nigeria.

Objective of the study

This study is examined the interaction between ICT Skills and research productivity of librarians in public university libraries in North-East, Nigeria. The specific objectives were to:

1.   find out the level of research productivity of librarians in public university libraries in North-East, Nigeria

2.   determine the level of ICT skills of librarians in public university libraries in North-East, Nigeria

3.   determine the influence of ICT skills on research productivity of librarians in public university libraries in North-East, Nigeria.

Research Questions

The following research questions were framed from the research objectives to guide the study:

1.   What is the level of research productivity of librarians in public university libraries in North-East, Nigeria?
2.   What is the level of ICT skills of librarians in public university libraries in North-East, Nigeria?

Hypothesis

$H0_1$: ICT skills have no significant influence on research productivity of librarians in public university libraries in North-East, Nigeria.

METHODOLOGY

The research design adopted for this study is the survey. The population of this study comprised 361 academic librarians in fourteen (14) public university libraries in North-East, Nigeria. Namely: Abubakar Tafawa Balewa University, Bauchi, Bauchi State University, Gadau, University of Maiduguri, Borno state university, Maiduguru, Federal university, Gashua, Bukar Abba university, Damaturu, Modibbo Adama university, Yola, Adamawa state university, Mubi, Federal university, Wukari, Taraba state university, Jalingo, Federal university, Kashere, Gombe state university, Gombe, Gombe state university of science and technology, Kumo and The Army university, Biu. A sample size of one hundred and ninety (190) respondents were drawn from the population using Taro Yamanne formula. Proportionate stratified sampling technique was used to allocate the 190-sample size to the 14 public university libraries based on their population stratum.

The instrument for data collection of this study is a structured questionnaire. Validity and reliability test of the instrument was carried out. The Cronbach alpha of the reliability test range between .85 to ,88. Data collected were analyzed using descriptive and inferential analysis with the aid of IBM Statistical Package for Social Science (SPSS, 21.0). The research questions were analyzed using frequency and percentage distribution, mean and standard deviation. while the hypothesis was tested at 0.05 level of significance and analysed using linear regression.

DATA ANALYSIS, RESULTS AND DISCUSSION OF FINDING

Response rate. A total of one hundred and ninety (190) questionnaires were distributed to the respondents. Out of which one hundred and sixty-five (165) representing (88.9%) were returned and found usable for this study.
The data shown in Tables 1 and 2 were collated to enable the researcher provide answers to the research questions raised in the study.

Research Question One: What is the level of research productivity of librarians in public university libraries in North-East, Nigeria?

Table 1. Level of Research productivity of librarians in public university libraries in public university libraries in North-East, Nigeria.

Types of Publications	6 and above (%) VHL	4-5 (%) HL	2-3 (%) LL	0-1 0-2 VLL	Mean	SD
Journal articles	35 (21.2%)	58 (35.2%)	44 (26.7%)	28 (17.0%)	2.61	1.004
Conference proceedings	7 (4.2%)	41 (24.8%)	57 (34.5%)	60 (36.4%)	1.97	0.886
Textbooks	15 (9.1%)	28 (17.0%)	47 (28.5%)	75 (45.5%)	1.90	0.992
Monographs	12 (7.3%)	22 (13.3%)	68 (41.2%)	63 (38.2%)	1.90	0.895
Book chapters	6 (3.6%)	35 (21.2%)	52 (31.5%)	72 (43.6%)	1.85	0.881
Co-authored textbooks	10 (6.1%)	31 (18.8%)	49 (29.7%)	75 (45.5%)	1.85	0.932
Technical reports	10 (6.1%)	25 (15.2%)	39 (23.6%)	91 (55.2%)	1.72	0.934
Scientific peer-reviewed bulletins	7 (4.2%)	22 (13.3%)	41 (24.8%)	95 (57.6%)	1.64	0.869
Grand Mean					1.93	0.92

Source: Researcher's Field Survey, 2021
Decision rule: 1.5 – 2.0 = Very low, 2.1 – 2.49 = Low, 2.5 – 3.49 = High, 3.5 – 4.0 = Very high

Table 1 presents the result on the level of research productivity of librarians in public university libraries in North-East, Nigeria. The grand mean (1.93, SD = 0.92) reveals that the level of research productivity of librarians in public university libraries in North-East, Nigeria is very low. The result revealed that publishing of journal articles is high (mean = 2.61) while other types of publications are very low. This result shows that public university librarians in North-East, Nigeria have not given serious attention to other type of publications or are not familiar with them.

Research Question Two: What is the level of ICT skills of librarians in public university libraries in North-East, Nigeria?

Table 2. Level of ICT skills of librarians

Level of ICT skills of librarians	Very high (4)	High (3)	Low (2)	Very Low (1)	Mean	Std.
Ability to use the computer devices					**3.19**	**0.736**
My ability in using MS Word to type my documents is	85 (51.5%)	64 (38.8%)	15 (9.1%)	1 (0.6%)	3.41	0.681
My ability in using google drive to store files on the servers is	79 (47.9%)	66 (40.0%)	20 (12.1%)	-	3.36	0.689
My ability in using google docs to create and edit files online while collaborating with other with other colleagues is	70 (42.4%)	71 (43.0%)	23 (13.9%)	1 (0.6%)	3.27	0.719

Table 2 Continuation

My ability in using google drive to synchronize files across devices is	60 (36.4%)	83 (50.3%)	19 (11.5%)	3 (1.8%)	3.21	0.714
My ability in using reworks to management reference management software is	59 (35.8%)	72 (43.6%)	32 (19.4%)	2 (1.2%)	3.14	0.764
My ability in using Mendeley to manage and share papers and manage reference is	52 (31.5%)	80 (48.5%)	32 (19.4%)	1 (0.6%)	3.11	0.724
My ability in using statistical software such as SPSS for data analysis is	54 (32.7%)	77 (46.7%)	29 (17.6%)	5 (3.0%)	3.09	0.787
My ability in using google drive to share files for research is	51 (30.9%)	83 (50.3%)	24 (14.5%)	7 (4.2%)	3.08	0.789
My ability in using My skills in using endnote to manage bibliographies and references is	48 (29.1%)	82 (49.7%)	31 (18.8%)	4 (2.4%)	3.05	0.759
Ability in using electronic databases					**3.35**	**0.687**
My ability in using internet search engine to search for information resources is	78 (47.3%)	72 (43.6%)	13 (7.9%)	2 (1.2%)	3.37	0.683
My ability in using online databases to access resources such as EBScohost, HINARI, AGORA, Scopus, JSTOR, SciELO, ScienceDirect, etc. is	77 (46.7%)	71 (43.0%)	15 (9.1%)	2 (1.2%)	3.35	0.697
My ability in using Online Public Access Catalogue (OPAC) to access resources is	73 (44.2%)	72 (43.6%)	20 (12.1%)	-	3.32	0.681
Ability in using research tools					**3.40**	**0.645**
My ability in using e-mails to send out research work for editing and publication is	87 (52.7%)	68 (41.2%)	9 (5.5%)	1 (0.6%)	3.46	0.630
My ability in using WhatsApp to collaborate with colleagues is	85 (51.5%)	71 (43.0%)	9 (5.5%)	-	3.46	0.600
My ability in using storage devices such as flash drive, CD plate, memory card etc.to store document is	87 (52.7%)	64 (38.8%)	13 (7.9%)	1 (0.6%)	3.44	0.665
My ability in using video conferencing to collaborate with colleagues is	75 (45.5%)	70 (42.4%)	18 (10.9%)	2 (1.2%)	3.32	0.716
My ability in using ResearchGate to share papers, ask and answer questions, and find collaborators is	65 (39.4%)	87 (52.7%)	13 (7.9%)	-	3.32	0.613
Grand Mean					**3.31**	**0.689**

Source: Researcher's Field Survey, 2021
Decision rule: 1.5 – 2.0 = Very low, 2.1 – 2.49 = Low, 2.5 – 3.49 = High, 3.5 – 4.0 = Very high

Librarians in public university libraries in North-East, Nigeria were asked to indicate their level of ICT skills in Table 2. The result indicates high level of ICT skills among librarians in public university libraries in North-East, Nigeria (overall mean score = 3.31) on a scale of 4. ICT skills was divided into three constructs namely ability in using the computer, ability in using electronic databases and ability in using research tools. The result shows the average mean of each of the construct to be ability in using the computer (mean = 3.19), ability in using electronic databases (mean = 3.35), ability in using research tools (mean = 3.40). This result indicates that the librarians in public university libraries in North-East, Nigeria have more ability in using research management tools than using electronic databases in carrying out research activities. This could be as a result of the role these research management tools play in promoting library and information services research activities.

Hypothesis: ICT skills have no significant influence on research productivity of librarians in public university libraries in North-East, Nigeria.

Table 3. Influence of ICT skills on Research Productivity

Predictors	B	Beta (β)	T	*P*	R^2	*Adj.* R^2	F	ANOVA (Sig.)
(Constant)	1.100		2.796	0.006				
Ability in using the computer	0.003	0.003	0.029	0.977				
Ability in using electronic databases	0.240	0.221	2.200	0.029	0.050	0.032	2.833	0.040
Ability in using research tools	0.005	0.003	0.036	0.971				
Dependent Variable: Research productivity Predictor: (Constant), Ability in using the computer, Ability in using electronic databases, Ability in using research tools. DF (F-Statistic) = 3, 161								

Source: Field Survey Results, 2021

Table 3 shows the regression analysis result for testing of hypothesis: The result shows that ICT skills ($F_{(3, 161)}$ = 2.833, R^2 =.050, $p < 0.05$) had a significant influence on research productivity of librarians in North-East Nigerian public universities. The R^2 (0.050) of the regression model indicate that only 5% of the change in research productivity can be accounted for by ICT skills and the other 95% can be explained by other variables that included in the model. This result showed that ICT skills is a significant predictor of research productivity of librarians in North-East, Nigeria public universities. This implies that the level of ICT skill of the librarians can influence their research productivity. Therefore, the null hypothesis (H_{01}) is rejected. This result showed that ICT skills determine research productivity in public universities in North-East, Nigeria. Therefore, this result suggests that ICT skills are vital to improving research productivity when adequate attention and planning are offered by management and administrators of public university libraries in North-East, Nigeria. The indicators of ICT skills (ability in using the computer, ability in using electronic databases, ability in using research tools.) were regressed against research productivity using multiple linear regression analysis. The result revealed that ability in using electronic databases ($β = 0.221$, $t = 2.200$, $p < 0.05$) had a positive and significant influence on research productivity in public university libraries in North-East, Nigeria. On the other hand, the result showed that ability in using the computer ($β = 0.003$, $t = 0.029$, $p > 0.05$), ability in using research tools ($β = 0.003$, $t = 0.036$, $p > 0.05$) had no significant influence on research productivity. The result showed that ability in using electronic databases contributes highest to the change in research productivity in public university libraries in North-East, Nigeria.

Discussion of Findings

This study examined ICT skills and research productivity of librarians in public university libraries in North-East, Nigeria. This section reports the findings of this study and discusses the findings in line with previous scholarly literature. The research questions drawn for the study were intended at determining the interaction of ICT skills on research productivity of librarians in public university libraries in North-East, Nigeria.

Research question one: sought to find out the level of research productivity of librarians in public university libraries in North-East, Nigeria. The study found that the level of research productivity of librarians in public university libraries in North-East, Nigeria is very low. The low level of research productivity of librarians found in this study is consistent with the submission of Simisaye (2019) which indicated that the level of research activity of academic staff in research institutes in South-West, Nigeria is very low. Adetomiwa (2018) also made similar observation regarding the low research productivity of academic staff in Nigeria. This finding also agrees with the finding of Lawal and Olawale (2020) who asserted that the level of productivity of librarians in Bowen University is low. On the other hand, this finding disagreed with the finding of Okonedo (2015) who found that there is a high level of research productivity of librarians in public universities in South-West, Nigeria. Also, a report released by the University World News on the proportion of publications from Nigeria in comparison with other African countries also corroborated the low level of research productivity in Nigeria. The country's low research output probably reflects the low priority accorded to research and development by government

and decision-makers in Nigeria.

The findings of this study showed that journal articles constitute greater part of research productivity of librarians in public university libraries in North-Est, Nigeria. This is probably attributed to the fact that journal articles are given more importance by academics or that journal articles are easy, less time consuming and cheaper to publish than other types of publications. This finding is consistent with Okiki and Mabawonku (2013), Simisaye (2019) and Okonedo (2015) who found out that journal articles ranked highest by publication types followed by conference proceedings. It also is worth noting that the number of articles published is one of the parameters for promoting researchers and academics.

Research question two sought to identify the level of ICT skills of librarians in public university libraries in North-East, Nigeria. The finding of this study shows that the level of ICT skills of librarians in public university libraries in North-East, Nigeria is high. This finding agrees with the study of Ahmed and Sheik (2020) who identified that there was a high level of ICT skills among sOmeluzor and Patric (2021) who revealed that majority of the respondents had a high level of ICT skills. Similarly, this finding is in line with the finding of Ugwuanyi (2016) who discovered that ICT skills among librarians in South-East, Nigeria was high. This study is in advocacy with Oyedokun, Oyewumi, Akanbi and Laaro (2018) result of investigation into the ICT skills among librarians, which indicated demonstrated a high level of ICT skills on the part of librarians in selected university libraries in Kwara state, Nigeria corroborates the finding of this study. Also, this finding also agrees with the finding of Kattimani and Naik (2013) who discovered that the librarians are highly skilled in ICT. On the other hand, the finding is inconsistent with the study conducted by Afebende and Orim (2017); Adomi and Anie (2013) who indicated a low level of ICT skills of librarians.

This study also found that librarians in public university libraries in North-East, Nigeria had a high proficiency in using software applications. This did not agree with the findings of Bajpai and Margam (2019) whose finding disclosed that librarians working in college libraries in University of Delhi, India possess low proficiency in using software applications. Similarly, the finding of this study is contrast with the study of Oyovwe-Tinuoye, Omeluzor and Ijiekhuamhen (2021) whose finding revealed that librarians had a low level of ICT skills and were not proficient in software applications and databases. Also, this discovery does not correspond with that of Ayoku and Okafor (2015) who found that librarians have no skill in using software applications and databases.

Test of hypothesis:

The null hypothesis was tested at 0.05 level of

significance. ICT skills have no significant influence on research productivity of librarians in public university libraries in North-East, Nigeria.

The result revealed that ICT skills had a positive and significant influence on research productivity of librarians in public universities in North-East, Nigeria. This finding is similar to the study done by Basahuwa, Unegbu and Babalola (2020) who investigated the influence of ICT Skills and job performance of librarians in public university libraries in North-Central, Nigeria and revealed that, there was significant influence of ICT skills on job performance of librarians. In the same vein, a conducted by Lawal and Olawale (2020) discovered that ICT skills have significant impact on research productivity of the librarians in Bowen university. Similarly, Oyedipe & Popoola (2019) found that possession of relevant ICT skills impacted positively on library personnel performance. Consistently, findings of the study is also in agreement with Bugyei, Obiri-Yeboah and Kavi (2017) whose findings revealed that ICT skills have positive influence on research activities in selected institutes in Ghana. In addition, Akpobasah-Amugen and Ogunbadejo (2019) investigated the impact of ICT use on research productivity of academic staff in Federal Polytechnic Ede, Osun State, discovered that ICT skills have a significant influence on research productivity of the academic staff. These findings corroborated the finding of this study. The null hypothesis is therefore rejected.

CONCLUSION

Research productivity is an important indicator of librarians' performance in university libraries. Librarians conduct research and publish their findings in reputable outlet in form of books, chapters in books, co-authored books, journal article and conference proceedings. The study revealed very low level of research productivity among librarians in public university libraries in North-East, Nigeria. The implication of low level of research productivity among librarians results to stagnation on the same rank for many years, low morale arising from this stagnation, poor visibility and non-recognition among colleagues locally and internationally. The result of this study also shows ICT skills of librarian in public university libraries in North-East, Nigeria, is high.

RECOMMENDATIONS

The following recommendations were made based on the findings:

1.   Librarians should endeavor to collaborate in co-author publications, such as textbooks, journal articles, conference proceedings, monographs, book chapters and technical reports, especially as it affects the

profession so as to further develop the profession and create more scholarly literature. This is in addition to training and re-training in the area of research skills to enhance their research productivity.

2.   Necessary ICT facilities should be provided by the library management and adequate training conducted on their use in order to sustain the level of their skills to enhance research productivity.

REFERENCES

Adomi, E. E. & Anie, S. O, (2013) An assessment of computer literacy skills of professionals in Nigerian university libraries. *Library Hi Tech News, 23(2)*, 10-14. Available at DOI:10.1108/07419050610660735 (Accessed on 14 Nov 2013).

Afebende, G.B. & Orim, F.S. (2017) Education and training of information professionals for national integration and development in Nigeria: the path not yet trodden. *International Journal of advanced library and information science 5(1),* 23-27 Available on https://doi.org/10/10.23953/cloud/ijalis/319

Ahmed, S., & Sheikh, A. (2020). Information and communication technology skills among library and information science professionals: A predictor of enhanced library services. *Journal of Librarianship and Information Science,* 0961000620962162.

Aina, L. O. (2004) Library and information science text for Africa Ibadan: third world

Ayoku, O. A., & Okafor, V. N. (2015). ICT skills acquisition and competencies of librarians:

Basahuwa, C. B., Unegbu, V. E., & Babalola, Y. T. (2020). ICT skills and job performance of librarians in public universities in North-Central, Nigeria. *Journal of Science, Technology and Education8, 1, 154-166.*

Fonn,S., Ayieo, L. P., Cotton, P., Habib, A., Mbittu, P. M.F., Mtenje, A.& Ezeh, A. (2018) Repositioning Africa in global knowledge production. *The Lancer, 392* (10153) 1163- 1166

Jameel, A. S, & Ahmad, A. R. (2020). The mediating role of job satisfaction between leadership style and performance of academic staff. *International Journal of Psychosocial Rehabilitation, 24(04),* 2399–2414. https://doi.org/10.37200/IJPR/V24I4/PR201349.

Kattimani, S. F. & Naik, R. R. (2013). Evaluation of librarianship and ict skills of library and information professionals working in the engineering college libraries in karnataka, india: a survey, program: electronic library and information systems, 47(4). 345-369.

Kpolovie, P.J & Dorgu, I.E. (2019) Comparism of faculty research productivity (h-index and citation index) in Africa. *European Journal of Computer science and Information Technology. 7 (6)* 57-100

Lawal, W. O., & Olawale, G. S. (2020). Information and communication technology and research productivity of librarians in Bowen university, Iwo, Osun State. *Information Impact: Journal of Information and Knowledge Management, 11(3), 22-30.*

Odeyimi, A.O, Bamidele,F. A. & Adebisi, O. A. (2019) Increased research productivity in Nigeria: more to be done. retrieved April 12, 2019 from https/doi. Org/10.4155/fsoa-0083 *The Times Higher Education (2019) World University Rankings*

Ogbomo, E. F. (2010} Publication output of librarians in tertiary institutions: a case study of delta state university, Abraka, Nigeria. *Library Philosophy and practice* (e-journal) accessed from 1-9 http://digitalcommons.unl.edu/libphilprac/322 on 5th march 2019

Okiki, O. C., & Mabawonku, I. M. (2013). Impact of information literacy skills on academic staff research productivity in Nigerian federal universities. *Information and Knowledge management. 3*(2), 9-18.

Okon, M. & Ogbodo, C. (2014) Information and communication technology as a necessity for Libraries and Librarians of Nigerian University Libraries in the 21st Century. *Review of Information Engineering and Applications.1(2),* 39-54

Okonedo, S., Popoola,S.O,, Emmanuel, S. & Bamigboye, O. B. (2015) Correlational analysis of demographic factors, self-concept and research productivity of librarians in public universities in south-west, Nigeria. *international journal of library science 4(3)* 43-52 DOI; 10.5923/j. library20150403.01

Oyovwe-Tinuoye, G. O., Omeluzor, S. U., & Patrick, I. O. (2021). Influence of ict skills on job performance of librarians in university libraries of South-South, Nigeria. *Information Development 37(3) 345-356*

Simisaye, A. O. (2019). A study of research productivity of the academic staff in research institutes in south-west Nigeria. *Samaru Journal of Information Studies, 19(2),* 75-99.

Tsafe, G. A., Chiya, U. & Aminu, B. A. (2016) Scholarly publications in universities in Nigeria 2000- 2012 : A bibliometric analysis. *Library philosophy and practice*