



**UTILIZATION OF ELECTRONIC INFORMATION RESOURCES AS
CORRELATES OF PUBLICATION OUTPUT BY RESEARCHERS IN
AGRICULTURAL RESEARCH INSTITUTES IN OYO STATE, NIGERIA**

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ABSTRACT: *The study examined the utilization of electronic information resources (EIRs) as correlates of publications among research scientists in National Agricultural Research Institutes (NARIs) headquarter in Ibadan, Oyo State, Nigeria. Correlational research method was used to determine the relationship between utilization of EIRs and publications output among research scientists. Simple random sampling technique was used to select 217 respondents from a sample frame of 282 researchers based on Morgan's table for sample size in four (Institute of Agricultural Research and Training, National Institute of Horticultural Research, Forestry Research Institute of Nigeria and Cocoa Research Institute of Nigeria) NARIs. Data were obtained on types of EIRs utilized, extent of use, effect of EIRs utilization on publication and the total of researchers' publications using a structured questionnaire. The results obtained were analyzed using descriptive statistics (frequency counts, percentages, mean and standard deviation) and Pearson Product Moment Correlation coefficient (PPMC). Results revealed that major types of EIRs utilized by the researchers for their publications were Access to Global Online Research in Agriculture ($\bar{x} = 3.46$), Online Access to Research in the Environment ($\bar{x} = 3.41$) and The Essential Electronic Agricultural Library ($\bar{x} = 3.32$). The result further revealed that researchers have a high extent of use of EIRs with 100% utilization. The researchers stated that utilization of EIRs enhances efficient and effective publications ($\bar{x} = 3.58$) improve the quality of their publications ($\bar{x} = 3.52$) and enhance their decision making in publishing ($\bar{x} = 3.48$). Results further revealed that 74.9% and 85.3% of the researchers published more in local journals and proceedings respectively compared to 25.1% and 14.7% that published in international journals and proceedings respectively. PPMC revealed a significant ($p < 0.05$) relationship between utilization of EIR ($r = 0.127$) and researchers publications. In conclusion, utilization of EIRs enhances the publication output of researchers in agricultural research institutes. Therefore, the study recommended that stakeholders and policy makers in agricultural research institutes should invest in facilities that will facilitate utilization of EIRs for publications activities among research scientists.*

KEYWORDS: Utilization, Electronic information resources, Publication output, Researchers, Agricultural research institutes.



INTRODUCTION

Publication is a crucial output and one of the major indicators of researchers' productivity in institutions that are research based. Its importance is evident in management decisions on academic staff appointments, tenure, career development, promotions, institutional assessment, ranking and recognition both locally and internationally. In view of this, researchers need to conduct research regularly in order to meet up with their required publications for their career advancement. Publication is a vital aspect of any scientific career, the quality and quantity of research publication influence decisions on jobs, salary, and tenure among others. The concept of publication is a term that describes the final stage of disseminating research findings to an appropriate destination. It is determined by counting the number of publications published by an individual or group of individuals within a particular period of time. These publications are disseminated through the publishing of textbooks, book chapters, and articles in journals, conference proceedings, newsletters, research bulletins, working papers and oral presentations among others. In most academic fields, publications in journals are widely accepted as the most appropriate and speedy form of communicating research findings. As a result, the bulk of global publications are in the form of journal articles (Okonedo, 2015). Hence, publication is considered as the channel for disseminating and validating research results and also crucial for career progression in institutions that are involved in research.

However, publications around the world are achieved through the process of conducting research. Research is a crucial activity among researchers in agricultural research institutes. It is considered very important for the development and transformation of the agricultural sector, as well as contributing to, and generating new knowledge. Research in the field of agriculture is viewed globally as one of the most essential components of the economy. This is because it is aimed at reducing poverty, raising income, contributing immensely to the food security of the nation and economic sustainability (Food and Agriculture Organisation of the United Nation (FAO, 2015). It is also an indispensable tool for sustainability in the agricultural sector. Research in the field of agriculture is viewed globally as one of the most essential components of the economy. This is because it is aimed at reducing poverty, raising income, contributing immensely to the food security of the nation and sustains the economy.

Furthermore, the goal of research in agricultural research institutes is not just to enable researchers to contribute to the advancement of the society, but also for career progression and also to be appreciated/recognized for their ingenuity. In essence, research exposes scholars to current information and enables them to share the results with members of the research communities. Career advancement in research based institutions is therefore measured by the publishing of research findings. This thus, requires that researchers should be able to have access to information resources to facilitate their research. Agricultural research institutes and other related institutions set up libraries to make information resources available and accessible to researchers in order to assist them and other members of staff in their quest for research. Research libraries are expected to acquire and provide access to resources, if these resources are used effectively by researchers, it would in turn improve the quality of their publications (Odunlade, 2017).



The availability of print and non-print information resources are geared towards facilitating the realisation of the research mandates of an institution. The electronic information resource makes it easier for researchers to access current and up-to-date information on happenings around the world. Yakubu and Omotoke (2015) affirmed that electronic information resources facilitate easy accessibility, assist in research, as well as overcome geographical limitation which enables researchers to access and utilise electronic information resources irrespective of location. Electronic information resources according to International Federation of Library Association (IFLA, 2012) referred to those information materials that require computer access, through personal computer, mainframe, or mobile devices, which could be accessed remotely or through the internet facilities

Furthermore, electronic information resources can be classified into two categories. These are fee-based electronic information resources and the open access electronic information resource. The fee-based electronic information resources are the licensed resources which are made available to users through licenses negotiated by institutions or organizations while the open access resources are the free-based resources which users can have access to freely, once the user is connected to the internet. These electronic information resources include electronic journal, electronic books, indexing and abstracting, electronic databases, technical reports, specification, patents, government and agencies site and host of others (IFLA, 2012; Dhanavanda, Mohammed, Esmail & Nagarajan, 2012).

Prior to the evolution of electronic information resources, researchers in the field of agriculture depended heavily on printed information resources to carry out their research activities (Moon, Hossain, Kang & Shing, 2012). However, the advancement in information and communication technology has accelerated the availability and utilization of electronic information resources in the field of agriculture and other related disciplines which can be accessed through the internet or intranet. This development has enabled African countries, particularly Nigeria agricultural researchers to gain free or low-cost access to vast electronic resources (Research4Life, 2016; Obasuyi & Okwilagwe, 2017), for example through Research4Life program initiative, such program includes AGORA (Access to Global Online Research in Agriculture); HINARI (Health Internet Access to Research Initiative); OARE (Online Access to Research in the Environment); ARDI (Access to Research and Innovation) databases. Today, libraries have adopted this technology in providing effective and efficient services to meet the information needs of users.

The utilization of electronic information resources is becoming very important these days due to the fact that they contain up to date resources and can be accessed any time, across all geographical boundaries. Such resources add value while conducting research. They are made quicker and faster means of accessing information at the global level. These attributes of electronic resources make them useful and paramount while conducting research. Kumar and Singh (2010) and Adeniran (2013) opined that research quality has improved significantly with the utilization of electronic information resources due to access to up to date information resources. Salaam, Ajiboye and Bankole (2013) and Okiki and Asiru (2011) noted that publication output forms one of the major reasons for the utilization of electronic information resources by scholars and researchers. Utilization of electronic information resources enhances research staff to achieve their desired level of publications. Meanwhile, research staff in agricultural research institutes in Ibadan engage in research and publication like their counterparts in other parts of the world, as a requirement for their promotions and



career advancement, although it is not known whether such publication output is influenced by utilization of electronic information resources.

STATEMENT OF THE PROBLEM

The Federal Government of Nigeria established agricultural research institutes across the country to promote research in diverse fields of agriculture. Consequently the researchers in these institutes are expected to conduct research that will not only facilitate agricultural development but also publish their findings in reputable journals as part of their job productivity. Electronic information resources are the major resources used in the academic world these days because of their advantages over the print-based resources.. Studies have however, revealed that researchers in the developing world are far behind their counterparts in the advanced world in terms of research productivity (Adams, King & Hook, 2010; Acharya & Pathak, 2019). This is further strengthened with the fact that it has been observed that during the promotion exercise some of the agricultural researchers are unable to publish the required number of publications to advance in their career progression. Researchers therefore need to access and utilize electronic information resources to harness knowledge for their research and publish their findings in reputable publishing outlets. Sequel to the above, literature also suggests that utilization of electronic information resources influence or has effect on research publications of researchers, search of literature by the researcher revealed that little has been done on the effect of utilization of electronic information resources on research publications of agricultural researchers in agricultural research institutes in Oyo State in recent time. Hence, the study is aimed at examining the utilization of electronic information resources as correlates of publication output by researchers in agricultural research institutes in Oyo State.

RESEARCH QUESTIONS

To carry out this research, the following questions were posed to guide the study:

1. What are the types of electronic information resources to researchers in agricultural research institutes in Oyo state?
2. What is the extent of utilization of electronic information by researchers in agricultural research institutes in Oyo State?
3. What is the effect of electronic information resources utilization on research publications by researchers in the study location?
4. How many publications were published by the researchers in agricultural research institutes over a period of five years (2018-2023)?

RESEARCH HYPOTHESIS

H₀₁: There is no significant relationship between the utilization of electronic information resources and research publications by researchers in agricultural research institutes in Oyo State.



LITERATURE REVIEW

The advancement in technology has transformed the way information is harnessed and disseminated. Libraries now deal with electronic information resources that use information communication technology to access and use information contents. This media technology has provided possibilities and opportunities for libraries to provide information resources locally, regionally and globally (Natarajan, Ravi & Ravichandran, 2012; Yakubu & Omotoke, 2015). Nowadays, agriculture research institutes are providing electronic information resources to complement the print-based resources. ITOCA (2013) posited that electronic resources databases have been used to support, improve and empower research at the universities, colleges, research institutions and other higher institutions where research activities are central to development. Electronic resources are valuable tools for research and scholarly communication. They are more up-to-date, can be accessed anywhere across all geographical boundaries and add values to research and development activities (Haridasan & Khan, 2009; Oyewo & Bello, 2014; Yakubu & Omotoke, 2015). Electronic information resources could be either an open access source or a subscription-based source. Qasim and Khan (2015) and Thanuskodi (2011) noted that scholars, lecturers and researchers used electronic resources that are available for free on the internet, as well as those being paid for by their respective institutions.

Furthermore, the studies conducted by McCreadie (2013) and Research4life (2016) revealed that electronic databases such as Access to Global Online Research in Agriculture (AGORA), Access to Research for Development and Innovation (ARDI), Health Internet Access to Research Initiative (HINARI), Online Access to Research in the Environment (OARE) and The Essential Electronic Agricultural Library (TEEAL) are being utilized by scientists in research-based institutions in Africa which also impacted positively on their research activities.

Publication output is basically one of the indicators used for measuring members of staff strength and weakness in an institution that is research based. The concept of publication output has been described by Sudhier and Abhila (2011) as the total number of papers published by an individual, group of people or by an institution in a given period of time. Research publications help to improve researchers' confidence, recognition, keep abreast with the latest development in specialized fields of study as well as professional growth and self-actualization. Iqbal and Mahmood (2011) and Okonedo (2015) enumerated the media through which researchers and academics communicate their publication output, thus academic journals, professional journals, books, reports, edited works, presentations and conference proceedings. In addition, Okonedo (2015) reported that the research output of research staff in Nigerian universities is high in journal publications, technical reports and conference papers. In another development, Egberongbe (2011), Okiki (2012), Amjad, Ahmed and Naeem (2013) and Bansal (2015) revealed that the majority of research scholars' use electronic resources like journals and online databases frequently for their research activities.

The studies of Okello-Obura and Magara (2008), and Seema and Jyoti (2011) affirmed that a lot of benefits are associated with the utilization of electronic resources as users can easily gain access to wide range of information for the improvement of their research and global dissemination of research findings. In recent development, Abba and Song (2020) investigated the level of utilization of electronic information resources among agricultural



scientists in National Agricultural Research Institutes in Kaduna State. The outcome of the study revealed that there was a high level of utilization of electronic information resources among the scientists for research activities. Furthermore, Oduwole and Sowole (2006), Akobi (2007) and Salaam and Aderibigbe (2010) evaluated the TEEAL database usage in Nigeria across institutions; their findings revealed that the databases have the required information needed which in turn helped them in their research activities. On the other hand, Ajuwon and Olorunsaiye (2013) reported high utilization of the Research4life database by the majority of researchers and clinicians in health related institutions.

Further, the study of Dulle (2015) reported that African countries have a poor usage of electronic resources; meanwhile, the availability of these resources has greatly improved. In support of the above, Angello and Wema (2010), Mugwisi, Ocholla and Mostert (2013), ITOCA (2014) and Kwadzo (2015) affirmed that the use of online databases such as AGORA, HINARI, and OARE by agricultural researchers, extension workers and students in Tanzania, Zimbabwe, Nigeria and Ghana was low. Their findings also indicate that on individual databases, their level of utilization was equally not significant with 50% indicating that they used AGORA and HINARI databases while 40% indicating that they used OARE.

Similarly, Obasuyi and Okwilagwe (2017) investigated the level of utilization of Research4Life databases by scientists in Nigerian agricultural research institutes, the outcome which indicated that HINARI database scored a mean of 2.24, followed by AGORA 2.27 and OARE 1.97 which translated that the levels of utilization of the databases were not significant. The result also indicated that 60.45% of the scientists were not using Research4Life databases while 39.6% were utilising the databases. Therefore, the investigation concluded that, the level of utilization of Research4Life databases by scientist in agricultural research institutes in Nigeria is low

The utilization of electronic information resources by biological researchers in the United Kingdom were surveyed by Rolinson, Meadows and Smith (1995); the findings revealed that researchers who were more active in the utilization of electronic resources were found to publish more journal articles, authored books, book reviews, edited works, reports among others than those who were less active in the use of electronic resources. The investigation was done by comparing the extent of use of electronic resources with their publication outputs and study found that there was a correlation between the use of electronic resources and publication output among researchers in the survey. Also the study conducted on the level of use of information technology and electronic information resources among researchers in Botswana College of Agriculture (BCA) and Department of Agricultural Research (DAR) in Botswana, South Africa by Subair and Kgankenna (2002) reported that researchers place a high value on information technology and electronic resources in agricultural research, but they lack necessary skills to appreciably access and use these resources.

However, despite the number of benefits of publication output offered to research scientists in the field of agriculture, studies have shown that researchers from African nations are generally low in the number of paper publications compared to their counterparts in the developed countries. Moahi (2007), Onyancha (2008), Kamba (2017) and Daramola (2016) have linked low publication in Africa to inadequate funding, lack of equipment/facilities, poor information infrastructure, working conditions, lack of time, lack of research skills government policies, collaboration, shortage of journals editors and referees, unfavorable



criteria for promotion of scientists, limited number of information sources published in a country as well as low accessibility and utilization of electronic resources.

The study of Kirlidog and Bayir (2007) linked academic productivity with access and use of electronic resources. They attributed the low level of scientific publications in developing countries in relation to that of developed and industrialized nations essentially to inadequate access to scientific literature as typified by modern electronic resources. Also, Ani, Ngulube and Onyancha (2014) conducted a study on the effect of accessibility and utilization of electronic resources on productivity of researchers in Nigerian universities. A survey method was used in the study, with a questionnaire as the instrument for data collection. Responses from 324 researchers out of 586 that were surveyed were used for data analysis. Correlation analysis showed that there was a positive correlation between accessibility and utilization of electronic resources on productivity of respondents in the survey ($r=0.135$; $p=0.015$). This implies that increase in access and use of e-resources will lead to increase in productivity among researchers at the surveyed universities. Similar result was obtained when the hypothesis was tested at international level with $r=0.158$ and $p=0.004$. In other words, researchers that access and use electronic resources in research frequently publish more articles in international journals than those who do not. It was recommended that, in view of the observed positive impact of electronic resources on productivity in the survey; all stakeholders in the management of university managements should intensify the process of effective information and communication technology (ICT) diffusion and provision of relevant e-resources in Nigerian universities towards qualitative research. This will also make researchers in Nigerian universities to be globally competitive for journal space in international journals, and thus bridge the productivity gap between Nigeria and developed countries.

THEORETICAL FRAMEWORK

McClelland's Achievement Theory

The theory was used to anchor the study. The theory of McClelland is a theory that describes the categories of members of staff that exist in an organization and their diverse needs of achievement. The theory was propounded by David McClelland in the 1960s. The theory believes that the need and achievement of members of staff in an organization are acquired over a period of time which influences the gain of experience. Therefore, an employee with a high need for achievement will definitely strive to increase his or her expected productivity. In other words, the need for achievement leads to the desire to initiate and accomplish quality research in order to achieve academic excellence in one's professional discipline both national and international. The theory advocates that a researcher in the field of agriculture with high need for academic productivity in research and publication such a staff will work hard to increase his/her output for successful career advancement. Furthermore, career advancement in agricultural research institutes requires a high level of commitment to research, which will eventually lead to increase in productivity. Therefore, researchers with a high need for achievement will be willing to utilize electronic information resources in his or her day-to-day research activities; such researchers will be involved in active research in order to produce high quality scientific publications.



RESEARCH METHODOLOGY

The study used a Correlational research method to determine the relationship between utilization of EIRs and publications output in the study location. The study population consists of 282 researchers (agricultural researchers) in the four National Agricultural Research Institutes headquarter in Oyo State, Nigeria namely: Institute of Agricultural Research and Training (IAR&T), Cocoa Research Institute of Nigeria (CRIN), Forestry Research Institute of Nigeria (FRIN) and National Institute for Horticultural Research (NIHORT). Simple random sampling technique was used to select two hundred and seventeen (217) researchers from a total population of 282 based on Morgan's table for sample size at 95% confidence level and 3.5% margin of error which is proportionately 77% of the researchers in the institutes. Then, samples were taken from each institute using proportional allocation formula by Cochran (1977). Self-designed questionnaire was the major instrument for data collection. The researcher and the research assistants monitored the distribution and the collection of copies of the questionnaire from the respondents using a convenient sampling method. A total of two hundred and seventeen (217) copies of the research instrument were administered to the respondents while two hundred and one (201) copies were duly filled for analysis which represented 92.6% return rate. The data obtained were analysed using descriptive statistics such as frequency counts, percentage, mean and standard deviation while the research hypothesis was analysed using inferential statistics like Pearson Product Moment Correlation (PPMC) at 0.05 level of significance

RESULTS AND DISCUSSION

Research Question 1: What are the types of electronic information resources accessible to researchers in agricultural research institutes in Oyo state?

In order to identify the types of electronic information resources accessible to researchers in agricultural research institutes in Ibadan, Oyo State, respondents were asked to respond to 11 item questions with a Likert type scale. The result represented in Table 1 revealed that 86.6% of the respondents were accessing AGORA (Access to global online research in agriculture) as the major electronic information resources. This is followed by 83.6% of the respondents who were accessing OARE (Online access to research in the environment) and 83.1% of the respondents who were utilizing TEEAL (The essential electronic agricultural library) while 25.4% were accessing HINARI (Health Inter-network to Research Initiative) which was the least item indicted by the respondents.

It could therefore be deduced from the above that, electronic information resources such as AGORA, OARE and TEEAL were the major types of electronic information accessible to researchers in agricultural research institutes in Oyo State. This corroborated earlier reports by Mcreadie (2013), Research4Life (2016) and Obasuyi and Okwilagwe (2017) that the type of electronic information resources accessible in National Agricultural Research Institutes were AGORA, TEEAL and OARE. The finding implies that agricultural based institutes in Nigeria relied heavily on the database to meet up with the needs of the scientists. This can be attributed to the fact that the databases are provided for developing countries for free or low cost access to 69,000 academic and professional peer-reviewed online contents made



available for agricultural scientists to meet up with their research information needs (Research4Life, 2016).

Table 1: Types of electronic information resources accessible to researchers in agricultural research institutes

S/N	Electronic information resources accessible	NA	OA	RA	VRA	\bar{x}	S.D
1	AGORA (Access to global online research in agriculture)	7 3.5%	20 10.0%	43 21.4%	131 65.2%	3.48	0.813
2	OARE (Online access to research in the environment)	10 5.0%	23 11.4%	43 21.4%	125 62.2%	3.41	0.879
3	TEEAL (The essential electronic agricultural library)	12 6.0%	22 10.9%	60 29.9%	107 53.2%	3.30	0.890
4	ARDI (Access to research for development and innovation)	14 7.0%	21 10.4%	62 30.8%	104 51.7%	3.27	0.911
5	Electronic Journals	3 1.5%	19 9.5%	123 61.2%	56 27.9%	3.15	0.641
6	AJOL (African Journal Online)	14 7.0%	29 14.4%	80 39.8%	78 38.8%	3.10	0.897
7	Electronic Books	3 1.5%	31 15.4%	123 61.2%	44 21.9%	3.03	0.659
8	DOAJ (Directory of Open Access Journals)	23 11.4%	18 9.0%	91 45.3%	69 34.3%	3.02	0.946
9	CD ROM	25 12.4%	20 10.0%	97 48.3%	59 29.4%	2.95	0.944
10	Other electronic information resources	75 37.3%	11 5.5%	67 33.3%	48 23.9%	2.44	1.215
11	HINARI (Health Inter-network to Research Initiative)	125 62.2%	25 12.4%	32 15.9%	19 9.5%	1.73	1.044

Key: Very Readily Accessible =VRA, Readily Accessible = RA, Occasional Accessible =OA Not Accessible= NA

Source: *Field Survey, 2023*



Research Question 2: What is the extent of utilization of electronic information by researchers in agricultural research institutes in Oyo State?

The result of the study presented in Table 2 showed the extent of utilization of electronic information resources by researchers in agricultural research institutes in Oyo State. The finding revealed that 95.5% of the researchers affirmed that relevant electronic information resources were used regularly for their publications. Furthermore, 93% of the researchers utilized the resources because they could access current journal articles in their field of specialization and 90.5% of the researchers claimed that, they utilized the resources to enhance their research performance while 84.0% of the respondents agreed that they utilized the resources in order to stay informed which was the least item indicated.

Hence, it can be deduced from the findings that the majority of the researchers utilized the resources regularly; hence the resources were highly utilized. This however, negated the Obasuyi and Okwilagwe (2017) study which stated that the level of electronic information resources utilization by researchers in agricultural research institutes in Nigeria was not significant. However, it upheld scholars such as Ajuwon and Olorunsaye (2013), Anyaoku and Anunobi (2014), Abubakar and Akor (2017) studies that there was a high level of electronic information resources utilization by agricultural researchers in Nigeria. The outcome of the finding could imply that there has been an improvement in the provision of ICT infrastructures that translated to the high level of utilization of the resources among the research scientists.

Table 2: Extent of utilization of electronic information resources by researchers in agricultural research institutes

S/N	Extent of utilization of electronic information resources	LE	ME	HE	VHE	\bar{x}	S.D
1	I utilized relevant electronic information resources regularly for my publications	2 1.0%	7 3.5%	77 38.3%	115 57.2%	3.52	0.617
2	I utilized electronic information resources because I can access current journal articles in my field of specialization.	7 3.5%	7 3.5%	73 36.3%	114 56.7%	3.46	0.728
3	I utilized electronic information resources to increases my research performance	11 5.5%	8 4.0%	65 32.3%	117 58.2%	3.43	0.810
4	I utilized electronic information resources on regular bases for communicating research findings	12 6.0%	14 7.0%	50 24.9%	125 62.2%	3.43	0.864
5	I utilized electronic information resources to facilitate my decision in research process	11 5.5%	10 5.0%	79 39.3%	101 50.2%	3.34	0.810
6	I utilized electronic information resources to improve my research quality	8 4.0%	19 9.5%	70 34.8%	104 51.7%	3.34	0.810
7	I utilized electronic information resource to keep abreast with current research findings in my field	8 4.0%	12 6.0%	87 43.3%	94 46.8%	3.33	0.763
8	I utilized electronic databases due to downloading of free articles	7 3.5%	21 10.4%	74 36.8%	99 49.3%	3.32	0.799
9	I utilized electronic information resources	8	16	88	89	3.31	0.746



for timely dissemination of research	4.0%	7.9%	43.8%	44.3%		
10 I utilized electronic information resources	7	25	68	101	3.31	0.821
to stay informed	3.4%	12.4%	33.8%	50.2%		

Key: Very High Extent= VHE, High Extent= HE, Moderate Extent=ME, Low Extent= LE

Source: Field Survey, 2021

Table 3 revealed the extent of utilization of electronic information resources by researchers in agricultural research institutes in Oyo State presented in percentage. All the researchers utilized electronic information resources maximally representing 100.0% utilization. This implies that the extent of utilization was very high.

Table 3: Test of Norm showing the extent of utilization of electronic information Resources by Researchers in Agricultural Research Institutes in Oyo State

Interval	Mean index	Extent of utilization to EIRs	Frequency	Percentage
1-20		Low	-	-
21-40	33.80	High	201	100.0

Research Question 3: What is the effect of electronic information resources utilization on publication output of researchers in the study location?

In order to ascertain the effect of utilization of electronic information resources on publication output, respondents were asked to respond to a ten-item Likert scale questionnaire. The result presented in Table 4 revealed that the majority (96.0%) of the respondents stated that utilization of electronic information resources promoted efficiency and effectiveness in their publications. Furthermore, 93.5% of the respondents affirmed that, utilization of electronic information resources have influence their value for information in agricultural research and publications while 91.6% of the respondents claimed that utilization of electronic information have improved the quality of their publications while the least (85.0%) of the respondents reported that utilization of electronic information resources made it possible for them to locate materials which are not available in their institutes.

The conclusion drawn from the above result revealed that the majority of the researchers established that utilization of electronic information resources enhanced efficient and effective publications, improved the quality of their publications as well as enhanced decision making in publishing. The finding is in agreement with Research4life (2016) report which established that utilization of electronic information resources have impacted positively on research productivity of research scientists in agricultural institutes in Africa. It also aligns with the findings of McCreadie (2013) and Dulle (2015) who confirmed that the perceived effect of utilization of electronic information resources have positively affected teaching, research output and community activities in institutions that are research based. Similarly, the finding was in line with Ngulube et al. (2014) who established that researchers that access



and utilize electronic information resources frequently publish more articles than those who do not.

Table 4: Effect of Utilization of Electronic Information Resources on Publication Output by Researchers in Agricultural Research Institutes

S/ N	Effect of utilization of electronic information resources on publication output	SD	D	A	SA	\bar{x}	S.D
1	Utilization of electronic information resources promote efficiency and effectiveness in my publications	7 3.5%	1 0.5%	62 30.8%	131 65.2%	3.58	0.682
2	Utilization of electronic information resources increase my value for information in agricultural research and publications	7 3.5%	6 3.0%	63 31.3%	125 62.2%	3.52	0.722
3	Utilization of electronic information resources have improve the quality of my publications	8 4.0%	9 4.5%	55 27.4%	129 64.2%	3.52	0.762
4	Utilization of electronic information resources have enhanced my decision making in publishing activities	10 5.0%	2 1.0%	71 35.3%	118 58.7%	3.48	0.755
5	Utilization of electronic information resources improve the value of information in my specialized field	9 4.5%	16 8.0%	52 25.9%	124 61.7%	3.45	0.824
6	Utilization of electronic information enable me accomplish tasks more quickly	14 7.0%	2 1.0%	67 33.3%	118 58.7%	3.44	0.829
7	Utilization of electronic information resources enable me to accomplish more work than otherwise be possible	13 6.5%	5 2.5%	69 34.3%	114 56.7%	3.41	0.827
8	Utilization of electronic information resources has improve my confident in publication	14 7.0%	11 5.5%	59 29.4%	117 58.2%	3.39	0.877
9	Utilization of electronic information resources has increase my publication output	19 9.5%	4 2.0%	66 32.8%	112 55.7%	3.35	0.915
10	Utilization of electronic information resources has made it possible to locate materials which are not domicile in my institute.	22 10.9%	8 4.0%	61 30.3%	110 54.7%	3.29	0.973

Key: SD = Strongly Disagree, D= Disagree, A= Agree, SA= Strongly Agree

Research Question 4: How many publications were published by the researchers in agricultural research institutes over a period of five years (2014-2019)?

In order to determine the number of research publications by researchers in agricultural research institutes in Oyo State, the respondents were asked to respond to a six-item Likert scale questionnaire. The result presented in Table 6 showed that researchers had the highest number of their publications in journal articles with a total of 2,698 publications, out of which 2,022(74.94%) were published locally and 676(25.06%) were published at the international level. This is followed by conference papers which had a total of 1,191 publications out of which 1016(85.31%) were presented locally while 175(14.69%) were presented at international conferences. Technical reports recorded a total of 506 publications and 482 (95.2%) of these were local reports and 24(4.74%) were international reports.



It can therefore be established that researchers published more in the local outlets than in the international outlets. However, the publications were relatively higher in the journal than any other publications. The result is in line with the submission of Kamba (2017), Acharya and Pathak (2019) that researchers from Africa nations published more at local level than publishing at the international level. In addition, Okafor (2011), Oduwole and Ikhizama (2012) and Opesanwo and Simisaye (2017) likewise affirmed that publications of researchers in research based institutions were higher in journal articles than any other research publications. Moreover, the result of the study aligned with the views of Okiki and Mabawonku (2013) and Okonedo (2015) that researchers' publications in Nigeria were higher in journal articles, conference papers and technical reports but lower in textbook publications and book chapters. It is also necessary to note that, the reason for higher publications in journal articles and that of conference papers could be attributed to the fact that, one of the conditions or criteria for researchers' promotion is the number of articles published in a learned journal and the number of papers generated from conference presentations. These are considered as an important component of researchers' productivity in research based institutions.

Table 5: Number of Research Publications by Researchers in Agricultural Research Institutes in Oyo State (2018-2013)

S/N	Publications	Local	International	Total
1	Journal article	2022(74.94%)	676(25.06%)	2698
2	Conference paper	1016(85.31%)	175(14.69%)	1191
3	Technical report	482(95.26%)	24(4.74%)	506
4	Chapters in book	182(92.85%)	14(7.15%)	196
5	Textbook	80(90.91%)	8(9.09%)	88
6	Others	55(96.49%)	2(3.51%)	57
	Total	3837(81.02%)	899(18.98%)	4736

Source: *Field Survey, 2023*

Research Hypotheses:

Hypothesis 1: There is no significant relationship between the utilization of electronic information resources and research publications by researchers in agricultural research institutes in Oyo State

The result presented in Table 6 revealed that there is a significant relationship between the utilization of electronics information resources and research publications by researchers in agricultural research institutes in Oyo State ($r = .127$, $n = 201$, $p(0.017) < .05$). Hence, utilization of electronic resources correlates with the research publications by researchers in agricultural research institutes. Therefore, the hypothesis is rejected.



Table 6: Pearson Product Moment Correlation (PPMC) Showing the Relationship between Utilization of EIRs and Research Publications by Researchers in Agricultural Research Institutes

Variables	Mean	Std. Dev.	n	r	p-value	Remarks
Publications	26.8607	17.3629	201	.127*	.017	Sig.
Utilization of EIRs	33.8010	4.8785				

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

CONCLUSION

This study investigated the effect of utilization of electronic information resources and publication output of research scientists in agricultural research institutes in Oyo State, Nigeria. The study found that research scientists in agricultural research institutes in Oyo State were majorly accessing electronic information resources such as AGORA (Access to global online research in agriculture), OARE (Online access to research in the environment), TEEAL (The essential electronic agricultural library) and ARDI (Access to research for development and innovation) provided by Research4Life for free or at low cost for developing countries to assist researchers in agricultural information. The study established that there was a high extent of utilization of electronic information resources by researchers.. Researchers published more in the local outlet than in the international outlets; publications of researchers were relatively higher in journal articles than any other publications and generally, local publications have a higher percentage than the international publications. The study further revealed that researchers that utilized electronic information published more than those who did not and there was a significant relationship between the utilization of electronics information resources and research publications by researchers in agricultural research institutes in Oyo State.

The study concluded that research scientists in agricultural research institutes in Oyo State were majorly accessing electronic information resources such as AGORA (Access to global online research in agriculture), OARE (Online access to research in the environment), TEEAL (The essential electronic agricultural library) and ARDI (Access to research for development and innovation) provided by Research4Life for free or at low cost for developing countries to assist scientist in agricultural information.



RECOMMENDATIONS

Based on the findings and conclusion drawn from the study, the following recommendations were made:

- i. The extent of utilization of electronic information resources by researchers was reportedly high but there is still room for improvement among the researchers for the increase in publication output at the international level
- ii. Stakeholders in agricultural research institutes should create more conducive environment for research as well as adequate research grants should be made available and accessible for researchers to enhance their publications for both local and international level
- iii. Policy makers in agricultural research institutes like National Agricultural Research Institutes governing body, Agricultural Research Council of Nigeria and Federal Ministry of Agriculture to massively increase investments on ICT infrastructures such as computer and computer networks, reliable and sustainable Internet connectivity and subscribing to relevant electronic information resources in order for agricultural research institutes to become integrated into global research community in enhancing research activities and publishing of research findings.

FUTURE RESEARCH ON THE STUDY

Future research could be extended to international agricultural research institutes, colleges of agriculture and universities of agriculture in Nigeria to enquire on the research productive pattern of the academic scholars towards ensuring food security and nutritional value in the country.

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