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Information and Communication Technology and Research Productivity of Librarians in Bowen University, Iwo, Osun State

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Abstract

The purpose of this study was to identify the impacts of Information and Communication Technology on research productivity of librarians in BOWEN University Library, Iwo, Osun State from 2017 - 2019. The study adopted a survey method. The population of the study consisted of 10 librarians. Questionnaire was adopted as research instrument to collect data from the 10 librarians in the Library through a total enumeration method. The data were analysed using descriptive statistical method. Findings revealed that the research productivity of the librarians was low. However, they made use of ICT's for their research activities with attendant impacts. Major impacts were noticed in the area of data gathering procedures, and also collaborative research and improvement of quality and quantity of literature search and data analysis. The study recommends among others that librarians should endeavour to publish more research papers encouraged to receive trainings and necessary skills on the use of new technologies for research purpose.

Keywords   Research, Librarians, Bowen University,
Research productivity, ICT

Introduction

Conducting research is one of the key cardinal points to the development of the educational sector because it is one of the most significant undertakings of academics. Research helps to acquire more knowledge and also assist in advancing the frontiers of knowledge. Research publications in any field of specialization provides current information for growth, progress, development and an improved society because the various field of specialization works for the common good of the society. Also, information is power and this is measured by the amount of information at one's disposal and ability to obtain and use that information effectively. This translates that one major benefit of research is to gain new information or knowledge, which will be useful to make informed decision.

ICT (Information and Communication Technologies) is a powerful force in our society today. ICT is a machinery or equipment designed to fasten an operation, make work easier and comfortable by solving problems and overpowering challenges in relatively short time. It has so far impact various organization positively. Examples of ICT facilities are: Computer, smart phone, search engines etc. ICT provides great development opportunities by contributing to information dissemination and increase access to knowledge.

The application of technologies into research activities has been of great relevance because it makes research work easier, fast and comfortable. ICT facilitates quick access to works of other researchers without necessarily stepping into the library. According to Bugyei, Obiri-Yeboah and Kavi (2017), use of ICT tools have been established to be very helpful to researchers, not only in gaining quick access to needed information, but also ehnance communication of research findings. Similarly, ICT facilitates access to more reliable sources of information which can be found in virtual libraries with utmost convenience. In this time and age, a research work will hardly be a success without the usage of ICT facilities regardless of how little or small the application might be. Similarly, ICT further helps researchers in their relationship with other researchers and help to collaborate with distant researchers through the use of E-mail, social media, text messages and so on. After the gathering of relevant data, ICT also helps in the analysis of the data gathered to evaluate people's opinions and ideas on the topic worked on and most importantly it saves time and energy of the researcher. Technology is an important research tool that helps researchers to locate information sources for their study, collect and analyze relevant data. This underscores the importance of emerging technologies to research undertakings as it helps to gather direct information and access already established information which may be useful to corroborate new findings.

Technological innovations increase as time passes by, in order to enhance the socio-economic development of the country. In the light of this, several technologies have been built to aid the educational sector, especially the higher institutions of learning for efficient research productivity and advancement of knowledge. However, according to Achibong and David (2009), it has been observed that some academic staff lacks basic ICT skills necessary for the conduct of research or how they search for information necessary to complete their research activities. Similarly, they may find it difficult to collaborate with other distant researchers or communicate their research findings to targeted audience. These challenges can affect the research productivities of the academic staff. It is against this backdrop that this study sets out to investigate how emerging technologies affect the research productivity of librarians in BOWEN University Library, Iwo.

Objectives of the study

The objectives of this study are:

1. To identify the available ICT's and the ones used for research activities by the librarians in BOWEN University, Iwo, Osun State.
2. To find out the level of research productivity of librarians in BOWEN University, Iwo, Osun State.
3. To assess the impacts of the use ICT's on research productivity of librarians in BOWEN University, Iwo, Osun State.
4. To identify the challenges associated with the application of emerging technologies on research productivity of librarians in BOWEN University, Iwo, Osun State.

Research questions

The study is expected to provide answers to the following questions:

i. What are the available ICT's and the ones used for research activities by the librarians in BOWEN University, Iwo, Osun State?
ii. What is the level of research productivity of librarians in BOWEN University, Iwo, Osun State from 2017 -2019?
iii. What are the impacts of the use of ICT's on research productivity of librarians in BOWEN University, Iwo, Osun State?
iv. What are the challenges associated with the application of emerging technologies on research productivity of librarians in BOWEN University, Iwo, Osun State?

Literature review

Research is one of the major hallmarks of higher institutions. Others include teaching and community services. Research focuses on comprehensive study or investigation to discover facts through a systematic process of data collection and analysis that can aid generalization. According to Akuegwu, Udida and Bassey (2006), research is also a major criterion for the promotion of academic staff and, based on that should be highly regarded and sought after and therefore requires high level participation and quality work. This translates that research is very important in the academic lives of the entire community, not only to develop their knowledge, but also to earn promotion. Librarians in Nigeria are usually part of the academic staff in higher institutions and they engage in various research activities to solve problems facing their libraries, develop their knowledge and contribute to library science scholarly literature. Research publications are very important platform that provide recognition to researchers and communicate their research findings.

Research productivity can be described as the rate of the effectiveness of the research conducted by people. Research productivity can be measured by the quantity and quality of research outputs embarked upon by a researcher over a particular period of time. There are certain factors that may contribute to researcher's productivity. These factors include: Institutional features, such as type and size of institution, funding, laboratory size (Dever & Morrison 2009; Edgar & Geare 2013); Demographic variables including gender, family size and age of children (Fox 2005; Stack 2004), Academic capabilities and confidence, and self-efficacy (Quimbo & Sulabo 2014); Various social aspects such as workload, time spent, level and type of communication and supervision of doctoral students (Lee & Bozeman 2005).

Information and Communication Technologies (ICTs) refers to the integration of telecommunications and computers for information management. This include the use of digital communication gadgets such as computer, scanner, smartphones, internet, wireless networks and other similar equipment for the creation, manipulation, storage, retrieval, dissemination and communication of information (Rouse, 2019). ICT contributes to global access to information and has also contributed meaningfully to every facet of human endeavour. According to Techterms (2019), modern information and communication technologies have created a global village where people can interact and communicate irrespective of their physical locations. ICT's application to research endeavour is multifarious. ICT is useful in research, especially in such areas as data gathering, processing and analysis. Fung (2013) posits that the most common use of ICTs in research is in data processing. The increase in the ability of computer systems to perform better and more efficient has created new opportunities for using it to manage and process large amount of data which can be very complex and time consuming to handle manually. It equally improves accuracy of analysis of data. Similarly, researchers now have access to limitless numbers of full text journals through online databases. The search process has become more robust and efficient than before, and it makes tracking of citations a very easy task. Databases and libraries provide researchers with online access to hundreds of scholarly articles that can be used for their studies.

There are similar researches on research productivities and use of ICT among librarians, as well as other institutes. For instance, while Okonedo-Adegbaye (2015) study focused on research and publication productivity of librarians in public universities in South-West Nigeria; that of Bugyei, Obiri-Yeboah and Kavi (2017) focused on researchers in selected institutes in Ghana. However, there is no similar study on librarians from private universities, especially in South-West Nigeria and it is this gap that this study wants to fill.

Methodology

A survey method was adopted for the study. The study covered a period of three years (2017-2019). The population of the study constituted of the 10 librarians in the BOWEN University Library, Iwo and total enumeration of the population was adopted because of their limited number. Data for the study were collected using questionnaire. The questionnaires were administered one-on-one on the 10 librarians and was divided into five sections namely: Section A: Demographic Variables, Section B: Research Productivity of the Librarians, Section C: ICT's that are used for research activities, Section D: Impact of Emerging Technologies, Section E: Challenges Associated with the Use of ICT on Research Productivity. The 10 sets of questionnaires administered were closely monitored and all were returned. Also, descriptive statistical method (frequency counts and simple percentage) was used in analyzing the collected data, and frequency table was used in presenting the data for further clarification.

Results

Table 1: Demographic variables of Respondents

Highest Academic Qualifications	Frequency	Percentage
HND /BSc./B.A.	5	50%
PGD	1	10%
MLIS	1	10%
MPhil./ PhD	-	-
PhD	-	-
No response	3	30%

Age	Frequency	Percentage
18 – 30 years	2	20%
31 – 35 years	2	20%
36 – 40 years	3	30%
41 – 45 years	1	10%
46 & above	2	20%
Gender	**Frequency**	**Percentage**
Male	6	60%
Female	4	40%
Years of Working Experience	**Frequency**	**Percentage**
< 2 years	2	20%
3 – 5 years	4	40%
6 – 8 years	1	10%
9 – 11 years	2	20%
12 years & above	1	10%

Table 1 shows that 50% of the respondents have first degree, while 10% have MLIS. However, some 30% of the respondents do not respond to the question. Also, some 30% of the respondents were between 36 - 40 years, while 20% were 46 years and above. Also, 60% were male while the remaining 40% were female. The years of working experience of the respondents range from less than 2 years (20%), 3-5 years (40%) and 9-11 years (10%).

Table 2 What are the available ICT's and the ones used for research activities by the librarians in BOWEN University, Iwo, Osun State?

S/N	ICTs used for research activities among the librarians	Mostly used	Used	Rarely used	Not used
1.	Search engines	7 (70%)	3 (30%)	-	-
2.	Computer	8 (80%)	2 (20%)	-	-
3.	Smart phones	6 (60%)	3 (30%)	1 (10%)	-
4.	Scanners	-	2 (20%)	4 (40%)	4 (40%)
5.	SPSS (Statistical package for social science)	-	-	6 (60%)	4 (40%)
6.	Microsoft excel	2 (20%)	3 (30%)	4 (40%)	1 (10%)
7.	Word Processor (e.g. Microsoft word)	6 (60%)	4 (40%)	-	-
8.	Microsoft power point	2 (20%)	3 (30%)	3 (30%)	2 (20%)
9.	Computer printer	7 (70%)	3 (30%)	-	-
10.	Google form	-	1 (10%)	2 (20%)	7 (70%)
11.	Social media (for communicating with research collaborators)	6 (60%)	2 (20%)	2 (20%)	-
12.	E-mail	8 (80%)	2 (20%)	-	-
13.	Google scholar	1 (10%)	2 (20%)	4 (40%)	3 (30%)
14.	Online publishing website	3 (30%)	6 (60%)	1 (10%)	-
15.	Turn it in	1 (10%)	1 (10%)	6 (60%)	2 (20%)
16.	iCloud	-	-	2 (20%)	8 (80%)

17.	Drop box	-	-	2 (20%)	8 (80%)
18.	Referencing software/App	-	-	2 (20%)	8 (80%)

Table 2 indicates various ICTs available and used by the respondents. Majority of the respondents (70%) claimed that they mostly used search engines and computer printer, respectively, for research activities. Also, majority of 80% used computer and E-mail while 40% claimed that they rarely used scanners, Microsoft excel and Google Scholar, respectively. Similarly, 60% of the respondents claimed to mostly used Word processor (such as MS Word), while a fraction of 20% also claimed that they mostly used PowerPoint. Also, some 30% and 40% also claimed that they rarely used PowerPoint and Google Scholar, respectively. Meanwhile, majority of 70% and 80% did not use Google forms and Referencing software/ Applications. Similarly, 80% of the respondents claimed never to have used iCloud and Dropbox.

Table 3: What is the level of research productivity of librarians in BOWEN University, Iwo, Osun State from 2017 -2019?

Number of Research Papers Published	Total	Percentage
1 research paper	5	50%
2 research papers	4	40%
3 research papers	-	-
4 research papers	1	10%
TOTAL	**10**	**100%**

From Table 3, it is evident that majority of 50% of the respondents claimed that they have published one research paper in the last three years, while 40% have published 2 research papers and the remaining 10% has published 4 papers in the last three years.

Table 4: What are the impacts of the use of ICT's on research productivity of librarians in BOWEN University, Iwo, Osun State?

SN	ICT Impacts on research productivity librarians in BOWEN University	Strongly agree	Agree	Disagree	Strongly disagree
1	Emerging technologies improves data processing/analysis	7 (70%)	2 (20%)	1 (10%)	0
2	Emerging technologies helps to save time and energy of researchers	4 (40%)	6 (60%)	0	0
3	It helps in the publication of research output	6 (60%)	4 (40%)	0	0
4	ICT improves quality and quantity of literature search	7 (70%)	3 (30%)	0	0
5	it helps to collaborate and work with distant researchers	7 (70%)	2 (20%)	0	1 (10%)
6	It improves data gathering procedure	7 (70%)	2 (20%)	1 (10%)	0

n = 10

Table 4 shows the impact of ICT on research productivity of the respondents. The Figure shows that majority of 70% of the respondents strongly agreed that use of ICT improves data gathering procedures; facilitates collaborative research; and improves quality and quantity of literature search, and improves data processing/analysis. Some 40% of the respondents also claimed that it helps to save time and energy of the researchers. Also, 60% of the respondents strongly agreed that the use of ICT helped them in publishing their research outputs. It is worthy of note that some 10% of the respondents strongly

disagreed that ICT helped in facilitating collaborative research. Meanwhile, some 10% claimed that the use of ICT did not improve their data gathering, processing and analysis procedure.

Table 5: Wat are the challenges associated with the application of emerging technologies on research productivity of librarians in BOWEN University, Iwo, Osun State?

Challenges if using ICT on research productivity	Strongly agree	Agree	Disagree	Strongly disagree
Tight schedule of librarians affect the use of ICT	5 (50%)	4 (40%)	1 (10%)	0
High cost of subscribing to internet services	0	4 (40%)	6 (60%)	0
Poor internet facilities and network	1 (10%)	2 (20%)	6 (60%)	1 (10%)
Poor power supply affect the use of ICT facilities for my research activities	0	3 (30%)	7 (70%)	0
Lack of certain ICT skills affect my research productivity	0	3 (30%)	6 (60%)	1 (10%)
Inadequate ICT infrastructure tends to be an obstacle to my research productivity	0	4 (40%)	5 (50%)	1 (10%)

n = 10

Table 5 shows that majority of the respondents agreed that that their tight schedules affected the use of ICT for research activities. Also, some 40% of the respondents claimed that high cost of subscribing to internet services were their major challenge, whereas some 60% other did not experienced it as a challenge. Similarly, majority of 60% and 70% did not perceive poor internet facilities and power supply, respectfully, as challenges posed to their research activities, whereas some 30% and 40% claimed that lack of certain ICT skills and inadequate ICT infrastructure, respectfully, constituted as challenges.

Discussion of findings

The study revealed that librarians in BOWEN University Library engaged in research activities and majority of the respondents only published between 1 and 2 research papers in the last three years (2017-2019), which is considered relatively small. This contradicts Okonedo-Adegbaye (2015) findings that research publication output of librarians in public universities, South-west Nigeria, from 2009 -2014 was high. One should expect that librarians, with their robust information searching skills and sources should engage more in research activities.

The study also shows that majority of the respondents have basic ICT proficiency necessary to facilitate the use of the ICT tools for their research activities. This is demonstrated in their use of various ICTs such as search engines, computers, smart phones, word processor, social media and e-mails for their research activities. Also, ICT training gaps required by the respondents were identified as some of them claimed that they did not use Google forms, Google Scholar and Power points which are also required for research activities. These training needs were similar to what Bugyei, Obiri-Yeboah and Kavi (2017) discovered in a similar findings on selected institutes in Ghana.

It was also discovered that the use of ICT have impacts on research productivity of the librarians, especially in such areas as data gathering procedure, assist in collaborative research, improves quality and quantity of literature search, and improving data processing/ analysis, as well as communicating their research findings. This is in line with Bugyei, Obiri-Yeboah and Kavi (2017) findings that the use of ICT has positive impacts on research activities in selected institutes in Ghana. Also, they face various challenges, mostly inadequate ICT infrastructure, high cost of subscribing to the internet and tight schedule of librarians. This is in line with (Lee & Bozeman 2005) findings.

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Conclusion

It is evident from the study that Librarians from BOWEN University Library have low research productivity level in the last three years (2017-2019) and they rarely collaborate with other researchers from other institutions. Also, the librarians used several ICT's for research activities, mostly which include Search Engines, Computers and E-mail. It is also evident that the use of emerging technologies has a high impact on research productivity of the librarians. However, they face some attendant challenges in using the emerging technologies such as inadequate ICT facilities and tight schedule of librarians.

Recommendations

Based on the findings of this study, it is recommended thus:

- Librarians should endeavour to publish more research papers, especially as it affects the profession so as to further develop the profession and create more scholarly literature.
- Librarians should be encouraged to receive trainings and necessary skills on the use of new technologies for research purpose, especially the use of SPSS and PowerPoint for presenting their research findings and also to increase their research productivity.
- Lastly, necessary ICT facilities should be provided by the Library management and adequate training conducted on their use.

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