

## **Harnessing Information and Communication Technology (ICT) Tools for Communication Research and Publishing in Southeast Nigerian Universities**

**WOGU, Joseph Oluchukwu, Ph.D.**

Department of Mass Communication  
University of Nigeria, Nsukka, Enugu State

### **Abstract**

Innovations in ICT tools and services have changed the nature of research and publishing in the 21<sup>st</sup> century, and improved access to information collection, storage and distribution. This paper examines the level of lecturers' utilisation of these provisions in communication research and publishing in Southeast Nigerian universities with a focus on state-owned universities. The data for this study were gathered from both primary and secondary sources while the analysis was done using the Statistical Package for Social Sciences (SPSS, version 20.0). Results of the analysis reveal that lecturers with lesser years in service and research experience exhibit greater competence in the use of ICT tools than older and highly experienced lecturers; lecturers' utility of ICT tools and services is significantly very low; while high costs of ICT tools and services, publishing in impact factor and/or prized open access journals, together with poor ICT skills are responsible for low utility of ICT tools and services. This paper, therefore, recommends the provision of annual grants to lecturers for three papers on their presentation of journals' acceptance certificates. Secondly, compulsory ICT training programmes and examinations should be introduced as requirements for lecturers' promotion.

**Keywords:** ICT, Utility, Internet access, Electronic publishing, ICT competence, Lecturers, Communication research, Publishing.

### **Introduction**

**The emergence of** Information and Communication Technologies (ICTs), that is, computer hardware, software, databases, networks and other electronic devices (Osakwe, 2012) as indispensable tools for research and publishing in the 21<sup>st</sup> century has altered the academic landscape in Nigeria (Ololube, Kpolovie, Makewa, 2015). According to Kpolovie (2011, p.455),

ICT is the science of production and utilization of computer equipment, subsystems, software and firmware for the automatic analysis, acquisition, storage, manipulation, management, movement, transformation, control display,

interchange, transmission and retrieval of data (quantitative and qualitative information) to most appropriately meet human needs.

ICTs are predominantly used for the collection, storage, processing, transmission and presentation of information (World Bank, 2007). Concurring to the above argument, Ochai (2007) notes that Information and Communication Technology is used here to mean any form of interconnected equipment, system or subsystem of equipment that is used for the acquisition, storage, manipulation or processing, retrieval, control, display, switching, interchange, transmission, and reception of data or information. This covers internet services provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services, and other related information and communication activities (United Nations, 2008).

The application of ICTs to research and publication has changed the way data are generated and/or analysed, and the way and speed books are published. Equally, it has helped to “improve productivity, reduce cost, improve and fast-track decision making, expose book editors and marketers to other views concerning how things are done in other publishing companies with international reputation and therefore creating an opportunity for strategic application” (Ihebuzor & Odu, 2016, p.2). The tools provide wide access to information stored in many places as data sets, provide platforms for authors and publishers' partnership, and job opportunities in collaborative roles like Editorial, Design/Graphics, Print Production, Promotion/Marketing/Sales, Distribution and Warehousing, Finance and Administration (Ihebuzor & Odu, 2016). Specifically, the internet provides a free (sometimes restricted) method of sharing research and experimental results (Caldararo, 2013; Millea, Green, & Putland, 2005). In addition to these, ICT tools provide speedy, easy, remote, round the clock, access to unlimited information from different sources all over the world.

The ICT tools through desktop publishing provide for the production of dummies of books devoid of commercial printing, editing and change of the text, spelling and grammatical checks, and automatic mathematical analysis, create graphics for different uses, a typesetter's automatic pagination system is usually faster and quite adequate etc. These are facilitated by internet services, and provided the framework for the development of electronic or digital books, open access (though sometimes restricted) information storage systems, search engines and capabilities, e-publishing and distribution or marketing of books/research publications, e-libraries, and internationalisation of anti-plagiarism campaign. Article and book publications take only few months instead of years as experienced before.

Virtually all the higher institutions of learning in Africa and other continents of the world have embraced ICT tools as mechanisms to improve educational research (Burnett, 1994; Ifejiolor & Nwankwo, 2015) and publishing. As Nigerian academics go into the exciting and challenging digitalisation of research and publishing using ICT tools, it is pertinent to investigate the use of these tools for communication research and publishing among academics in the Southeast universities and its impact.

### **Objectives of the Study**

The primary goals of this paper are:

1. To assess the level of usage of the various ICT products and services by lecturers for communication research and publishing in Southeast Nigerian universities.
2. To find out the major limitations confronting lecturers' use of ICT products and services for communication research and publishing in Southeast Nigerian universities.
3. To proffer solutions to the identified hindrances to using the various ICT products and services by lecturers for communication research and publishing in Southeast Nigerian universities.

### **Significance of the Study**

This paper has both theoretical and empirical significances. Theoretically, it seeks to test the validity of the claim that ICT tools and services changed the pattern and level of research and publishing in the 21<sup>st</sup> century. At the empirical level, the findings and recommendations of the paper shall enable stakeholders in the higher education system in Southeast Nigerian universities to resolve the perceived crisis in communication research and publishing for effective development of research and learning.

### **Review of Extant Literature**

#### **ICT Tools and Services**

ICT tools and services refer to the set of electronic technologies and services rendered by individuals that enhance information generation, processing, storage, retrieving, and transmission such as computer hardware, software, internet dynamics and processes, and other digital devices that transmit text, sound, picture, motion, etc (Adoni & Kpangbam 2010; Olakulehin, 2009; Moursund & Biefeldt, 1999).

It is used to personify the nature, dynamics and roles or services of the integration of modernised communication equipment such as telephone lines and wireless signals, computers and computer accessories, and audio-visual systems since the 20<sup>th</sup> century for the effective creation, acquisition, analysis, accessibility, storage, retrieval, and dissemination of information in a global scale (Tomie, 2013;

Ololube, Amaele, Kpolovie, Onyekwere & Elechi 2012; Tiamiyi, 2003).

They include every gadget that are used in transmitting audio, video, data, and multimedia such as computer technologies (such as optical disks; disks flash memories, CDs/DVDs, video books multimedia projectors, interactive electronic boards and PCs), mobile technologies (such as mobile phones, PDAs, palmtops), satellite, network technologies and systems [such as personal area networks (PAN), campus area network (CAN) intranets, extranets and the Internet], cable, fibre optics, and wireless systems (Illoanusu & Osuagwu 2010).

### **Impact of ICTs on Research and Publishing**

Gowda & Shivalingaiah (2009) observe a positive preference for ICT prone research and publishing in Karnataka. However, the preferences depend upon the nature of resources available in libraries and the type of ICT infrastructure available. Similarly, Kaur and Verma (2009) observe that a maximum number of researchers in Thapar University prefer to use ICT E-resources for their research and publishing purposes. The findings of Shukla (2009), Swain & Panda (2009), Singh et al (2009), Maharana *et al* (2010), and Madhusudhan (2010) are similar to this observation. It is almost a consensus in the literature that the application and services of Information and Communication Technology (ICT) are not only integral to any meaningful development in research but also in the education sector.

Scholars like Kpolovie (2006), Kpolovie, Iderima & Ololube (2014), Kpolovie and Awusaku (2016); argue that the manner ICT tools are used in any given area determines the success or failure of scholars in their respective field. The results of their use depend on the users' knowledge and skills (Kpolovie, 2016). However, Ehikahamenor (2002) argue that it has permanently altered the ways academics conduct research and embark on publishing them.

ICT tools and services provide research and publication updates in most Nigerian universities (Kumar & Kaur, 2005; Tinio, 2002), provide access to information anytime and anywhere, increase and reinforce quality by creating an active process linked to real life, and expedite the acquisition and absorption of knowledge among academics (Kpolovie & Ololube, 2013). ICTs enable researchers to assemble data on time, do complicated mathematical and statistical calculations, data manipulation, and analysis. In addition, it offers researchers ready opportunities for disseminating research reports and findings through electronic publishing outlets. These outlets include e-books, e-journals, and personal websites (Yusuf, 2005). Thus, Umeagwu & Etu (2014), Umeagukwu *et al* (2014) argue that ICT tools and services are highly effective in enhancing research in tertiary institutions of learning in Nigeria.

### **Problems of Harnessing ICTs for Research and Publishing**

According to Achimugu, Oluwagbemi, Oluwaranti & Afolabi (2009), and Somekh

(2008), it is challenging to harness ICT tools and services for research and publishing in the education system particularly in the Third World. This is because it requires vision, new roles and relationships, and skills/competence. "Although many teachers believe ICTs are important components in education, their lack of knowledge and experience lead to a lack of confidence to attempt to introduce them into their instruction (Kpolovie & Awusaku, 2016). A large number of studies such as Berner (2002), Abdulkai (2004), observe that lack of knowledge, skills and experience lead to a lack of confidence and use of ICT tools and services.

Furthermore, the use of ICT tools and services requires positive attitudinal tendency (Ajzen, 2000) because as Williams & Iruloh (2014) observe, attitudes influence man's response to objects, situations, products, and persons. It epitomises a person's conviction and inclinations, prejudices or bias, ideas and fears about any specific development or situation or products (Waltz, Srickland & Lenz, 2016; Idaka, 2005). Therefore, lecturers' harnessing of ICT tools and services in the university education system is subject to their attitude towards the role and use of modern technologies in research and publishing (Kpolovie, 2007; 2014).

The literature equally reveals that the ability or success in harnessing ICT tools and services depend on their accessibility (Ololube, Ajayi, Kpolovie & Usoro, 2012). Accessibility here refers to the ability of required users to make use of the functionality and possible benefit of ICT tools and services. Literature is also perverse in its findings that high costs of ICT tools and services, official schedule, illiteracy, poor quality of service, low per capita income, and lack of interest hinder lecturers' use of ICT tools and services for research and publishing in Nigerian universities (Kpolovie & Obilor, 2013).

Anene & Odumih (2014), Ebenezer (2014), Idowu & Esere (2013), Adomi and Kpangban (2010), Adomi (2005), Aduwa-Ogiegbaen & Iyamu (2005), Tongia (2004) among others identify lack of government interest in providing ICT skills, high cost of acquiring, maintaining and installing of ICT, unavailability of relevant software, lack of basic knowledge, high cost of purchasing ICT software, lack of or restricted access to subscription-based scientific journals, lack of steady power supply, poor motivation and insufficient personal emolument as the major factors hindering academic research and publishing in the 21<sup>st</sup> century. According to Osundina (2007), Oshodin & Idehen (2007), Otakhor (2007) and Ogunlade (2008), other problems include *lack of basic and adequate infrastructures/resources*, poor installation of ICT related facilities, network failure, and poor maintenance culture.

A summary of the literature review reveals that in Southeast Nigerian universities, no conclusive pilot investigation into lecturers' use of ICT tools and services has being conducted to validate the findings made by researchers in other parts of Nigeria and the world generally. Such findings are in the areas of the level of their adoption for research and publishing, its impact and limitations. With a focus on communication research and publishing, this paper attempts to fill this gap.

### **Framework of Analysis**

**This paper adopts the** Unified Theory of Acceptance and Use of Technology (UTAUT) enunciated by Venkatesh, Morris, David & Davis (2003). This theory tries to explain the reason for ICTs in skill acquisition in all spheres of human existence. The theory has four key constructs, namely: performance expectancy, effort expectancy, social influence, and facilitating conditions that determine whether to use ICT or not. The impact or relationship of these categories with the use of ICTs is moderated by some individual difference variables such as age, gender, and experience.

This theory enables the paper assess the impact or relationship between performance expectancy and lecturers' use of ICT and its services in research and publishing in Southeast Nigerian universities. Similarly, it enables the paper assess the impact of effort expectancy, social influence, and facilitating conditions on lecturers' intention to use ICT and its services in research and publishing in Southeast Nigerian universities. It enables the paper also to explore the effect of age, gender, and experience on their relationships. This is the primary reason the theory is adopted in this study as a framework.

### **Method of Study**

This paper adopted survey method of data collection wherein structured questionnaire was used to generate data from respondents. The questions in the five point Likert scale structured questionnaire were designed based on the availability, accessibility, and use of ICT applications and services. Experts in the Faculties of Arts and Social Sciences, Chief Emeka Odumegwu Ojukwu University and Federal University Ndufu-Alike tested the validity of the research instrument - questionnaire. On the other hand, a test-retest method was carried out within an interval of two weeks at Institute of Management and Technology Enugu and Enugu State College of Education (Technical) to test its reliability. The correlation analysis of responses from the two set of tests showed a reliability of more than 0.95. The data from primary source was complemented by secondary data generated from books, journals, papers, and other publications in libraries and the internet.

From a total of 21 universities located in the Southeast Nigeria, according to Table 1 below, ten state-owned universities were chosen as the study area. The researcher chose these universities because of their consolidated and guaranteed sources of funding, which makes them inexcusable with regards to establishing and funding ICTs projects and programmes in their universities.

**Table 1: List of Universities in the Southeast Nigeria**

s/n	Ownership	Name	State of Location
1	Private Universities	Caritas University, Enugu	Enugu state
2		Paul University, Awka	Anambra state
3		Renaissance University, Agbani	Enugu state
4		Rhema University, Aba	Abia state
5		The University on Idemili, Alor	Anambra state
6		Godfrey Okoye University, Enugu	Enugu state
7		Coal City University, Enugu	Enugu state
8		Madonna University, Ihiala	Anambra state
9		Tansian University	Anambra state
10		Federal and State-owned Universities	Enugu State University of Science and Technology
11	University of Nigeria, Nsukka		Enugu state
12	Imo State University, Owerri		Imo state
13	Federal University of Technology Owerri		Imo state
14	Michael Okpara Federal University of Agriculture		Abia state
15	Abia State University, Uturu		Abia state
16	Chief Emeka Odumegwu Ojukwu University		Anambra state
17	Nnamdi Azikiwe University, Awka		Anambra state
18	Ebonyi State University		Ebonyi state
19	Federal University, Ndufu -Alike		Ebonyi state
20	National Open University of Nigeria, Enugu	Enugu state	

In the distribution and collection of the copies of the questionnaire, the eleven departments of mass communication in the ten public-owned universities located in five states of Southeast Nigeria were chosen. To prevent the omission of some academic staff through sampling, and considering their manageable number in the universities, the entire 215 academic staff members was chosen as sample. However, only 184 successfully completed and returned the questionnaire while 21 failed to return theirs. This represents 85.7% success in the distribution and collection of the data instrument. The data collected during the fieldwork were analysed with the aid of Statistical Package for Social Sciences (SPSS) version 20.0 to determine statistical central tendencies and deviations. However, the demographic data of respondents was analysed using frequency tables and percentage modules.

### **Data Analysis**

An analysis of the demographic data of the 184 respondents reveals that 112 are male (i.e. 60.9%) while female academics are 72 representing 39.1%. The analysis reveals their age demographics are: 35-44years (42.1%), 45-54years (34.6%), while 55years and above constitute 23.3%. In terms of rank, the sample is composed of 50 Assistant lecturers (i.e. 27.2%), 46 lecturers 11 (i.e. 25.0%), 36 Lecturers 1 (i.e. 19.6%), 32

Senior lecturers (i.e. 17.4%), 20 Associate Professors/Professors (i.e. 10.9%). An inquiry into their knowledge and use of ICT tools and services for academic research and publishing reveals the followings as presented in Table 2 below:

**Table 2: Knowledge and Use of ICT Tools and Services**

s/n	ICT products and/or tools		Total no.	Knowledge of the tools				Use of the tools			
				Male		Female		Male		Female	
				yes	no	yes	No	yes	no	yes	no
1	Desktop computer and Laptop	Assistant lecturers	50	32	nil	18	nil	32	nil	18	nil
		Lecturers 11	46	22	nil	24	nil	20	nil	26	nil
		Lecturers 1	36	18	nil	18	nil	18	nil	18	nil
		Senior lecturers	32	23	nil	9	nil	23	nil	9	nil
		Reader/Professors	20	17	nil	3	nil	17	nil	3	nil
		<b>Total</b>	<b>184</b>	<b>112</b>	<b>nil</b>	<b>72</b>	<b>nil</b>	<b>112</b>	<b>nil</b>	<b>72</b>	<b>nil</b>
2	Internet	Assistant lecturers	50	32	nil	18	nil	32	nil	18	nil
		Lecturers 11	46	22	nil	24	nil	20	nil	26	nil
		Lecturers 1	36	8	10	6	12	8	10	6	12
		Senior lecturers	32	10	13	5	4	10	13	5	4
		Reader/Professors	20	6	11	3	nil	6	11	3	nil
		<b>Total</b>	<b>184</b>	<b>72</b>	<b>34</b>	<b>56</b>	<b>16</b>	<b>72</b>	<b>34</b>	<b>56</b>	<b>16</b>
3	MS-Word	Assistant lecturers	50	32	nil	18	nil	32	nil	18	nil
		Lecturers 11	46	22	nil	24	nil	22	nil	24	nil
		Lecturers 1	36	18	nil	18	nil	18	nil	18	nil
		Senior lecturers	32	23	nil	9	nil	23	nil	9	nil
		Reader/Professors	20	17	nil	3	nil	17	nil	3	nil
		<b>Total</b>	<b>184</b>	<b>112</b>	<b>nil</b>	<b>72</b>	<b>nil</b>	<b>112</b>	<b>nil</b>	<b>72</b>	<b>nil</b>
4	Power Point	Assistant lecturers	50	10	22	3	15	10	22	3	15
		Lecturers 11	46	6	16	7	14	6	16	7	14
		Lecturers 1	36	3	15	4	14	3	15	4	14
		Senior lecturers	32	5	18	2	7	5	18	2	7
		Reader/Professors	20	2	15	1	2	2	15	1	2
		<b>Total</b>	<b>184</b>	<b>26</b>	<b>86</b>	<b>17</b>	<b>52</b>	<b>26</b>	<b>86</b>	<b>17</b>	<b>52</b>
5	Microsoft Excel	Assistant lecturers	50	10	22	3	15	10	22	3	15
		Lecturers 11	46	6	16	7	14	6	16	7	14
		Lecturers 1	36	3	15	4	14	3	15	4	14
		Senior lecturers	32	5	18	2	7	5	18	2	7
		Reader/Professors	20	2	15	1	2	2	15	1	2
		<b>Total</b>	<b>184</b>	<b>26</b>	<b>86</b>	<b>17</b>	<b>52</b>	<b>26</b>	<b>86</b>	<b>17</b>	<b>52</b>
6	DVD/CD/Pen Drive	Assistant lecturers	50	32	nil	18	nil	32	nil	18	nil
		Lecturers 11	46	22	nil	24	nil	22	nil	24	nil
		Lecturers 1	36	8	10	10	8	8	10	10	8
		Senior lecturers	32	6	17	6	3	6	17	6	3
		Reader/Professors	20	7	10	1	2	7	10	1	2
		<b>Total</b>	<b>184</b>	<b>75</b>	<b>37</b>	<b>59</b>	<b>13</b>	<b>75</b>	<b>37</b>	<b>59</b>	<b>13</b>



7	Printer	Assistant lecturers	50	32	nil	18	nil	32	nil	18	nil
		Lecturers 11	46	22	nil	24	nil	22	nil	24	nil
		Lecturers 1	36	8	10	10	8	8	10	10	8
		Senior lecturers	32	6	17	6	3	6	17	6	3
		Reader/Professors	20	7	10	1	2	7	10	1	2
<b>Total</b>		<b>184</b>	<b>75</b>	<b>37</b>	<b>59</b>	<b>13</b>	<b>75</b>	<b>37</b>	<b>59</b>	<b>13</b>	
8	Scanners	Assistant lecturers	50	32	nil	18	nil	32	nil	18	nil
		Lecturers 11	46	22	nil	24	nil	22	nil	24	nil
		Lecturers 1	36	8	10	10	8	8	10	10	8
		Senior lecturers	32	6	17	6	3	6	17	6	3
		Reader/Professors	20	7	10	1	2	7	10	1	2
<b>Total</b>		<b>184</b>	<b>75</b>	<b>37</b>	<b>59</b>	<b>13</b>	<b>75</b>	<b>37</b>	<b>59</b>	<b>13</b>	

Source: Field work, 2017

Furthermore, an investigation into the purpose for which the respondents use ICT tools and services for reveals the followings as reflected in Table 3 below:

**Table 3: Purpose of using ICT Products and Services personally**

Purposes of using ICT products and services	Lecturers' ranks	Total no.	Male		Female	
			yes	no	yes	no
E-mail and document exchange	Assistant lecturers	50	32	nil	18	nil
	Lecturers 11	46	22	nil	24	nil
	Lecturers 1	36	8	10	6	12
	Senior lecturers	32	10	13	5	4
	Reader/Professors	20	6	11	3	nil
	<b>Total</b>	<b>184</b>	<b>72</b>	<b>34</b>	<b>56</b>	<b>16</b>
Publishing in electronic journals & electronic books	Assistant lecturers	50	32	nil	18	nil
	Lecturers 11	46	16	6	15	9
	Lecturers 1	36	4	14	3	15
	Senior lecturers	32	6	17	2	7
	Reader/Professors	20	2	15	1	2
	<b>Total</b>	<b>184</b>	<b>60</b>	<b>52</b>	<b>39</b>	<b>33</b>
Sourcing for data using Internet	Assistant lecturers	50	32	nil	18	nil
	Lecturers 11	46	22	nil	24	nil
Sourcing for data using Internet	Assistant lecturers	50	32	nil	18	nil
	Lecturers 11	46	22	nil	24	nil
	Lecturers 1	36	8	10	6	12
	Senior lecturers	32	10	13	5	4
	Reader/Professors	20	6	11	3	nil
	<b>Total</b>	<b>184</b>	<b>78</b>	<b>34</b>	<b>56</b>	<b>16</b>
Operating online Data base	Assistant lecturers	50	20	12	5	13
	Lecturers 11	46	10	12	8	16
	Lecturers 1	36	4	14	3	15
	Senior lecturers	32	6	17	2	7
	Reader/Professors	20	2	15	1	2
	<b>Total</b>	<b>184</b>	<b>42</b>	<b>70</b>	<b>19</b>	<b>53</b>

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Career management & Development	Assistant lecturers	50	32	nil	18	nil
	Lecturers 11	46	22	nil	24	nil
	Lecturers 1	36	8	10	6	12
	Senior lecturers	32	10	13	5	4
	Reader/Professors	20	6	11	3	nil
	<b>Total</b>	<b>184</b>	<b>78</b>	<b>34</b>	<b>56</b>	<b>16</b>
Preparing manuscripts, proposals, and papers for presentation	Assistant lecturers	50	32	nil	18	nil
	Lecturers 11	46	22	nil	24	nil
	Lecturers 1	36	12	6	8	10
	Senior lecturers	32	15	8	5	4
	Reader/Professors	20	3	14	1	2
	<b>Total</b>	<b>184</b>	<b>84</b>	<b>28</b>	<b>56</b>	<b>16</b>
Book formatting, paper submission & Publishing	Assistant lecturers	50	32	nil	18	nil
	Lecturers 11	46	16	6	15	9
	Lecturers 1	36	4	14	3	15
	Senior lecturers	32	6	17	2	7
	Reader/Professors	20	2	15	1	2
	<b>Total</b>	<b>184</b>	<b>60</b>	<b>52</b>	<b>39</b>	<b>33</b>
Discussion Forums	Assistant lecturers	50	18	14	8	10
	Lecturers 11	46	10	12	10	14
	Lecturers 1	36	4	14	3	15
	Senior lecturers	32	6	17	2	7
	Reader/Professors	20	nil	17	nil	3
	<b>Total</b>	<b>184</b>	<b>38</b>	<b>74</b>	<b>23</b>	<b>49</b>
Casual Internet Surfing	Assistant lecturers	50	20	12	12	6
	Lecturers 11	46	8	14	5	19
	Lecturers 1	36	2	16	1	17
	Senior lecturers	32	2	21	nil	9
	Reader/Professors	20	nil	17	nil	3
	<b>Total</b>	<b>184</b>	<b>32</b>	<b>80</b>	<b>18</b>	<b>54</b>
Electronic Editing	Assistant lecturers	50	10	22	3	15
	Lecturers 11	46	6	16	7	14
	Lecturers 1	36	3	15	4	14
	Senior lecturers	32	5	18	2	7
	Reader/Professors	20	2	15	1	2
	<b>Total</b>	<b>184</b>	<b>26</b>	<b>86</b>	<b>17</b>	<b>52</b>

**Source: Field work, 2017**

In addition to the above discoveries, SPSS analyses of responses to questions on the prevailing difficulties in accessing and using ICT products and services reveal the followings as reflected in Table 4 below:

**Table 4: Results of SPSS Analyses:**

Difficulties	Grand Mean	Standard Deviation	Standard Error	Tests of Between-Subjects Effects	Sig.	Pairwise Comparisons
Lack of ICT skills and appropriate training	4.42	.721	.022	519.111	.000	@ 95% confidence Interval, no adjustments
Lack of knowledge of internet systems and operations	4.14	.897	.027	804.231	.000	@ 95% confidence Interval, no adjustments

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Limitations of internet access and speed	3.75	1.016	.071	230.000	.001	@ 95% confidence Interval, no adjustments
High costs of internet access	4.17	.778	.056	134.888	.001	@ 95% confidence Interval, no adjustments
High costs of ICT products and services	4.42	.721	.022	519.111	.000	@ 95% confidence Interval, no adjustments
Inadequate remunerations and finance	4.10	.695	.050	107.839	.509	@ 95% confidence Interval, no adjustments
Lack of personal will to use ICT products and services	2.16	.785	.025	615.036	.001	@ 95% confidence Interval, no adjustments
Poor installation of ICT facilities & Network failure	2.80	1.159	.031	1342.975	.000	@ 95% confidence Interval, no adjustments
Restricted access to and/or high price of e-journals, and books	4.03	.857	.058	163.839	.000	@ 95% confidence Interval, no adjustments
Epileptic power supply and high cost of energy/fuel	2.37	1.055	.075	248.246	.001	@ 95% confidence Interval, no adjustments
Publishing in impact factor and/or prized open access journals	4.42	.721	.022	519.111	.000	@ 95% confidence Interval, no adjustments

**Source: SPSS analysis of responses**

## **Discussion**

From the findings of the bio-data analysis, 60.9% of academic respondents are male while 31.9% are females. The analysis further reveals that 27.2% of academic respondents are Assistant lecturers, 25.0% are lecturers 11, 19.6% are Lecturers 1, 17.4% are senior lecturers, while 10.9% are Associate Professors/Professors. The sample is a good ratio spread and representation of all academic ranks in the university system. Therefore, the respondents or sample is objective and possess the experience and knowledge required to find answers to the research questions.

An investigation into lecturers' level of knowledge of ICT products and services reveals that 100% of the respondents acquired computer and laptop knowledge and actually apply such skills. Out of this number, 140 respondents representing 76.1% use them to prepare manuscripts, proposals, and papers for presentation. Similarly, 69.6% of the sample representing 128 respondents possess the internet knowledge and are users. The data reveals that Assistant Lecturers and Lecturer 11 constitute 75.5% of this number while 24.4% comprises other four ranks starting from lecturer 1.

However, their knowledge and use of critical ICT products are different and highly discouraging. Only 23.4% of the entire respondents acquired the knowledge of power point and Microsoft excel, while 72.8% have the knowledge of DVD/CD/Pen drive, printer and scanner. The data reveals that Assistant Lecturers and Lecturer 11

constitute 60.5% of this knowledgeable number while 24.4% comprises other four ranks starting from lecturer 1. Consequently, older and higher ranking lecturers have little or no knowledge of ICT products and their services.

Further investigation into respondents' use of ICT products and services for research and publishing reveals that 128 respondents (i.e. 69.6% of the sample) use them for sourcing for data, e-mail and document exchange, and career management and development. Out of this, 75% of those that use them belong to the ranks of Assistant lecturer and lecturer 11. Only 99 respondents representing 53.8% of the sample use these tools and services for book formatting, paper submission and publishing in electronic journals and electronic books. However, 81.8% i.e. 81 of these users of ICT for publishing belong to the rank of Assistant Lecturers and Lecturer 11.

The data reveal also that 61 respondents i.e. 33.2% of the sample use ICT products and services for operating online databases. Out of this number, 43 respondents representing 70.5% are Assistant Lecturers and Lecturer 11. Lesser percentage or proportion of the sample, that is, 33.2%, 27.2%, and 23.4% use ICT products and services for discussion forums, casual internet surfing, and electronic editing respectively. Further inquiry into the reason(s) for older or higher ranked academics indifference to acquiring ICT skills and their low participation or harnessing of ICT products and services for communication research and publishing as revealed above shows that little or no chances of further promotion in service (78.3%) and age (51.7%) are responsible. The factor of gender and professional experience received insignificant result of 8.0% and 2.1% respectively of the entire sample.

The SPSS analyses of responses to the various factors interrogated as problems or hindrances to lecturers' application or use of ICT products and services for communication research and publishing reveal that the impact of lack of ICT skills and appropriate training has a total grand mean of 4.42 with a standard deviation and error of .721 and .022 respectively. Its Tests of Between-Subjects Effects of all the responses to the question is 519.111 while the mean differences of the responses reveal a significant difference of .000. The difference should be significant at the .05 level. Therefore, the mean difference is insignificant in this case.

The pairwise comparison carried out based on the estimated marginal means to consider the possibility of adjustment reveals 'Least Significant Difference' in their responses that is equivalent to no adjustments at all. Consequently, the grand mean response of 4.42, which represents 'Agreed' in our Likert scale measure, is hereby upheld. Therefore, lack of ICT skills and appropriate training is a major hindrance to harnessing ICT products and services for communication research in Southeast Nigerian universities. This view is consistent with other research findings as reflected in the review of literature above.

Similarly, the analysis of responses to the impact of lack of knowledge of

internet systems and operations reveals a total grand mean of 4.14 with a standard deviation and error of .897 and .027 respectively. Its **Tests of Between-Subjects Effects** of all the responses to the question is 804.231 while the mean differences of the responses reveal a sig. difference of .000. The difference should be significant at the .05 level. Therefore, the mean difference is insignificant in this case. The pairwise comparison carried out based on the estimated marginal means to consider the possibility of adjustment reveals 'Least Significant Difference' in their responses that is equivalent to no adjustments at all. Consequently, the grand mean response of 4.14, which represents 'Agreed' in our Likert scale measure, is hereby upheld. Therefore, lack of knowledge of internet systems and operations is another major hindrance to harnessing ICT products and services for communication research in Southeast Nigerian universities. This view is consistent with other research findings as reflected in the review of literature above.

Further analysis of responses to the impact of limitations of internet access and speed reveals a total grand mean of 3.75 with a standard deviation and error of 1.016 and .071 respectively. Its Tests of Between-Subjects Effects of all the responses to the question is 230.000 while the mean differences of the responses reveal a sig. difference of .001. The difference should be significant at the .05 level. Therefore, the mean difference is insignificant in this case. The pairwise comparison carried out based on the estimated marginal means to consider the possibility of adjustment reveals 'Least Significant Difference' in their responses that is equivalent to no adjustments at all. Consequently, the grand mean response of 3.75, which represents 'Undecided' in our Likert scale measure, is hereby upheld.

Therefore, limitations of internet access and speed are not major hindrances to harnessing ICT products and services for communication research in Southeast Nigerian universities. This view is inconsistent with other research findings as reflected in the review of literature above. Further analyses of responses to the impact of high costs of internet access and high costs of ICT products and services reveal a total grand mean of 4.17 and 4.42 respectively. The analyses manifested a standard deviation and error of .778 and .056, and .721 and .022 respectively. The Tests of Between-Subjects Effects of all the responses to the questions are 134.888 and 519.111 respectively while the mean differences of the responses reveal a sig. difference of .001 and .000. The differences should be significant at the .05 level; therefore, the mean differences are insignificant in this case.

The pairwise comparison carried out based on the estimated marginal means to consider the possibility of adjustment reveals 'Least Significant Difference' in their responses that is equivalent to no adjustments at all. Consequently, the grand mean responses of 4.17 and 4.42, which represent 'Agreed' in our Likert scale measure, are hereby upheld. Therefore, high costs of internet access and high costs of ICT products and services are major hindrances to harnessing ICT products and services for communication research in Southeast Nigerian universities. This view is consistent

with other research findings as reflected in the review of literature above.

In addition, analysis of responses to the impact of inadequate remunerations and finance reveals a total grand mean of 4.10 with a standard deviation and error of .695 and .050 respectively. Its **Tests of Between-Subjects Effects** of all the responses to the question is 107.839 while the mean differences of the responses reveal a sig. difference of .509. The difference should be significant at the .05 level. Therefore, the mean difference is highly significant in this case. The pairwise comparison carried out based on the estimated marginal means to consider the possibility of adjustment reveals 'Least Significant Difference' in their responses that is equivalent to no adjustments at all. Consequently, the grand mean response of 4.10, which represents 'Agreed' in our Likert scale measure, is hereby upheld. Therefore, inadequate remunerations and finance is a major hindrance to harnessing ICT products and services for communication research in Southeast Nigerian universities. This view is consistent with other research findings as reflected in the review of literature above.

Similar analysis of responses to the impact of lack of personal will to use ICT products and services, and poor installation of ICT facilities and network failure reveal a total grand mean of 2.16 and 2.80 respectively. The analyses manifested a standard deviation and error of .785 and .025, and 1.159 and .031 respectively. The **Tests of Between-Subjects Effects** of all the responses to the questions are 615.036 and 1342.975 respectively while the mean differences of the responses reveal a significant difference of .001 and .000. The differences should be significant at the .05 level; therefore, the mean differences are insignificant in this case. The pairwise comparison carried out based on the estimated marginal means to consider the possibility of adjustment reveals 'Least Significant Difference' in their responses that is equivalent to no adjustments at all. Consequently, the grand mean responses of 2.16 and 2.80, which represent 'Disagreed' in our Likert scale measure, are hereby upheld. Therefore, lack of personal will to use ICT products and services, and poor installation of ICT facilities and network failure are not major hindrances to harnessing ICT products and services for communication research in Southeast Nigerian universities. This view is inconsistent with other research findings as reflected in the review of literature above.

Further analysis of responses to the impact of restricted access to and/or high price of e-journals, and books, and *publishing in impact factor and/or prized open access journals* reveal a total grand mean of 4.03 and 4.42 respectively. The analyses manifested a standard deviation and error of .857 and .058, and .721 and .022 respectively. The **Tests of Between-Subjects Effects** of all the responses to the questions are 163.839 and 519.111 respectively while the mean differences of the responses reveal a sig. difference of .000 and .001. The differences should be significant at the .05 level; therefore, the mean differences are insignificant in this case.

The pairwise comparison carried out based on the estimated marginal means

to consider the possibility of adjustment reveals 'Least Significant Difference' in their responses that is equivalent to no adjustments at all. Consequently, the grand mean responses of 4.03 and 4.42, which represent 'Agreed' in our Likert scale measure, are hereby upheld. Therefore, restricted access to and/or high price of e-journals, and books, and publishing in impact factor and/or prized open access journals are major hindrances to harnessing ICT products and services for communication research in Southeast Nigerian universities. This view is consistent with other research findings as reflected in the review of literature above.

Finally, analysis of responses to the impact of epileptic power supply and high cost of energy/fuel reveals a total grand mean of 2.37 with a standard deviation and error of 1.055 and .075 respectively. Its Tests of Between-Subjects Effects of all the responses to the question is 248.246 while the mean differences of the responses reveal a sig. difference of .001. The difference should be significant at the .05 level. Therefore, the mean difference is highly significant in this case. The pairwise comparison carried out based on the estimated marginal means to consider the possibility of adjustment reveals 'Least Significant Difference' in their responses that is equivalent to no adjustments at all. Consequently, the grand mean response of 2.37, which represents 'Disagreed' in our Likert scale measure, is hereby upheld. Therefore, epileptic power supply and high cost of energy/fuel are not major hindrances to harnessing ICT products and services for communication research in Southeast Nigerian universities. This view is inconsistent with other research findings as reflected in the review of literature above.

### **Summary and Conclusion**

The investigation and analysis carried out in this paper to determine the availability and accessibility of ICT products and services for communication research in Southeast Nigerian universities, and the possible factors hindering access reveal that:

1. Lecturers' self-application of ICT products and services such as power point, Microsoft excel, e-publishing, operating online databases, and electronic editing for communication research and publishing is significantly very low;
2. Lecturers with lesser years in service and research experience (i.e. Assistant Lecturers and Lecturer 11) exhibit greater competence and willingness in the use of ICTs than older and highly experienced lecturers;
3. Little or no chances of further promotion in service and age are responsible for older academics indifference to acquiring ICT skills/ knowledge, and harnessing them for communication research and publishing;
4. lack of ICT skills and appropriate training, lack of knowledge of internet systems and operations, high costs of internet access, high costs of ICT products and services, inadequate remunerations and finance, restricted access to and/or high price of e-journals and books, and publishing in impact factor and/or prized open access journals are the major factors hindering or

militating against harnessing of ICT products and services for communication research and publishing in Southeast Nigerian universities.

### **Recommendations**

Based on the data gathered, presented and analysed in this paper, it is therefore recommended that universities should provide annual grants to lecturers for publishing at least three research papers on their presentation of journals' acceptance certificates and costs; and the publishing of at least one book. Secondly, compulsory ICT training programmes and examinations should be introduced as requirements for lecturers' promotion and other annual privileges. Thirdly, university management team in the Southeast Nigeria should introduce integrated internet services system in the management of memos, letters/applications, result publications, project supervision, and all forms of correspondences involving lecturers and their departments, faculties, and the university management. The provision of ICT facilities is still inadequate in all the universities. Therefore, proprietors of such institutions should increase its annual budget/funding for such matters so that the issue of availability or access will become a thing of the past.

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