

ICT Competence and use of Electronic Information Resources among Distance Learning Students in South-West Nigeria

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Abstract

The paper reports on part of the finding of a doctoral study that was completed in Babcock University in 2017. The study was carried out among 8,812 undergraduates of the National Open University in South-West, Nigeria to ascertain the influence of ICT competence on use of electronic information resources (EIRs). The survey research design was adopted for the study. Stratified sampling technique was used to select 802 participants. Data was collected with a self-structured questionnaire and analyzed using descriptive statistics, correlation and simple regression analysis. Findings showed that majority of the students had the requisite ICT competence to effectively use electronic information resources. There was a significant relationship between the use of EIRs and ICT competence ($r=0.389$; $p<.05$) and ICT competence had a significant influence on the use of EIRs (Adj. $R^2 = .150$, $F(1,569)=101.40$, $p<.05$). The study recommended that the management of NOUN should make efforts to remove the impediments to optimum use of EIRs by NOUN students such as erratic power supply, and poor Internet access. Also, the library should provide periodic training to sharpen the ICT competence of students.

Keywords: Electronic information resources, ICT competence, Lifelong learning, National development, National Open University of Nigeria, South-West Nigeria.

1. Introduction

We live in a society that is immersed in technology development, where progress of ICT has changed our way of life, impacting many areas of knowledge (Duta and Martinez-Rivera, 2015). The application of ICT in education has increased access to higher education, improved quality of education and given students competitive advantage globally. The emergence of electronic information resources (EIRs) has greatly transformed information sourcing and use in the academia. Electronic information resources (EIRs) or simply e-resources are information stored in electronic format, in computer or computer related facilities such as CD-ROMs, flash drives, digital libraries or the Internet.

Tiwari, Tiwari, and Sharma (2013) opined that information is the key factor of any kind of research and development and it is a fundamental resource which is essential for survival in today's competitive and wired world. Oloruntoyin and Adeyanju (2013) posited that information is a vital key to national development and is a sine qua non in all phases of development from the birth to death. In the light of this, information is vital to the success and achievement of every student and most importantly, higher education students. However, effective use of electronic information resources depend on ICT competence hence, undergraduates, especially distance learning students must be ICT literate.

Distance learning is the type of education where students seldom come in physical contact with teachers. The purpose of distance education is to help bridge the gap in higher education and increase the literacy level of the citizens thereby providing education for all and promoting lifelong learning. The need to provide access to quality education and equity in educational opportunities, to meet special needs of employers by mounting special certificate courses for their employees and to encourage internationalization of tertiary education curricula led to the establishment of the National Open University of Nigeria (NOUN) (Federal Republic of Nigeria, 2004). Open distance education involves open admissions and freedom of students to select what, where and when to learn. It is a flexible educational system in terms of organizational structures, delivery and communication patterns (Okebukola, 2014).

In order to achieve her stated objectives, the National Open University of Nigeria has invested heavily in EIRs and the enabling ICT infrastructure for use by staff and students. Unfortunately, Omoike (2013) observed that EIRs are grossly underutilized among NOUN students. Perhaps, inadequate or lack of ICT competence by students in tertiary institutions is responsible for this situation. The huge financial commitment required to sustain access to electronic information resources as well as the importance of the resources for academic success of NOUN students makes it necessary to find out the factors affecting the limited use of EIRs among this student group. Therefore, this study examined the influence of ICT competence on the use of EIRs by the undergraduates of NOUN in South-West, Nigeria. The study was guided by the following research questions:

1. How ICT competent are the students of the National Open University in South-West, Nigeria?
2. To what extent do the students of the National Open University of Nigeria in South-West, Nigeria use electronic information resources?
3. What are the constraints to effective use of EIRs by the students of National Open University in South-West, Nigeria?
4. Is there any significant relationship between ICT competence and use of electronic information resources by students of the National Open University in South-West, Nigeria?
5. How does ICT competence influence the use of electronic information resources by the students of the National Open University in South-West, Nigeria?

2. Scope of The Study

This study focused on National Open University of Nigeria students' ICT competence in relation to the use of electronic information resources. The study excluded the postgraduate and diploma students of NOUN. Male and female undergraduate students participated in the study. The South-West geopolitical zone was selected for the study because it has the largest population of students in the National Open University of Nigeria. The ICT competence that was examined in this study includes basic computer skills, proficiency in handling productivity software, communication skills and Internet skills.

The following null hypotheses were tested at $\alpha = 0.05$ level of significance:

- H₀₁: There is no significant relationship between ICT competence and use of electronic information resources by the students of National Open University of Nigeria in South-West, Nigeria.
- H₀₂: ICT competence has no significant influence on the use of electronic information resources by the students of National Open University of Nigeria in South-West, Nigeria.

3. Literature Review

Sarkar (2012) described ICTs as the hardware, software, network and media for collecting, storing, processing, transmitting and presenting information; which comprises electronic devices such as computer, radio, television, telephone, satellite, and the Internet. The use of ICTs in education is believed

to increase access to learning opportunities and enhance the quality of education (Omoike, 2013). ICT connects students and teachers with remote information resources and to research experts globally (Omotosho, Lateef, Amusa & Bello, 2015). Mikre (2011) posited that ICT use enables constructivist learning approaches including active learning, collaborative learning, creative learning, integrative learning and evaluative learning. With the use of ICTs, students become more independent and take responsibility for their learning. The implication is that there will be increase in economic development of the nation as a result of citizens becoming more and more literate. Furthermore, ICT is a booster to the development of both urban and rural communities because ICT competence is critical to the success of enhancing national development in a globalised era (World Bank, 2006) and is crucial to national competitiveness in a developing context.

There have been conflicting reports on the ICT competence of undergraduate students in the literature. Omotosho, et al. (2015) revealed that majority of the students are highly skilled in the use of ICT and its applications such as the Internet and e-mail and recommended compulsory training and re-training session for newly admitted students in order to improve their ICT competence. Quadri, Adetimirin and Idowu (2014) carried out a study on availability and utilization of library e-resources in private universities in Ogun state, Nigeria. The study revealed that Internet use was high in the selected universities. However, a study conducted by Hamutunwa (2013) among distance learners at University of Namibia established the fact that most learners lacked computer skills, searching skills, and sufficient training in the use of ICT and electronic resources. Adetimirin (2012) studied the ICT literacy of undergraduates in Nigerian universities and found that undergraduates in state universities had low ICT skills while those in federal universities' ICT skills were rated average. A similar finding was reported by Ojeniyi and Adetimirin (2013). In a survey of sandwich students of University of Ado Ekiti, Nigeria, Akande (2011) revealed that less than half of the respondents were computer literate and that very few used Internet facilities.

Studies within and outside Nigeria have reported low usage of EIRs by undergraduates. Gakibayo, Ikoja-Odongo, and Okello-Obura (2013) in their study on electronic information resources utilization by students in Mbarara University library, Kenya revealed that the students had inadequate computer skills which resulted in low usage of electronic information resources in the University library. Similarly, Omoike (2013) reported low level of use of EIRs by NOUN students in Lagos and Ibadan study centers. Omosekejimi, Eghworo and Ogo (2015) found low usage of EIRs by the students of the Federal University of Petroleum Resources, Effurun (FUPRE) which they linked to lack of skills required to navigate the modern technology. Abubakar and Adetimirin (2015) reported a positive relationship between computer literacy and the use of electronic information resources. This implies that low level of computer literacy will limit people's ability to use EIRs.

As important and beneficial as the use of ICT in education is, there are factors that hinder its effective use. Khan, Hassan and Clement (2014) observed that despite the potential of ICTs to advance the educational system, developing countries are not giving the desired benefits due to barriers like erratic power supply (Adetimirin, 2012), frequent breakdown of ICT facilities and inadequate Internet bandwidth (Omotosho et al, 2015), incompetence of students in the use of ICT and lack of regular training (Bingimlas, 2009). Emwata and Nwalo (2013) found out that inadequate ICT skills of the students constitute the major challenge to the use of EIRs. Therefore, for a sustainable national development, there is the need to address these issues so distance learners can harness the opportunities of ICTs and be empowered to compete favourably with their counterparts globally.

4. Methodology

The study adopted a descriptive survey research design in which students self-reported their ICT competence and use of EIRs. The population of the study was 8,812 undergraduate students of National Open University in South-West, Nigeria. Stratified sampling technique was used to select a sample of 812

participants from Akure, Ikeja-Lagos and Ibadan study centers in South-West, Nigeria. Data was collected using a self-structured questionnaire which had a Cronbach reliability coefficient of 0.91. There was a 73.1% return rate of the questionnaires distributed. Data collected were analyzed using descriptive statistics, correlation and simple regression analysis. SPSS version 21 was deployed to analyze the data.

Research Question 1: How ICT competent are the students of NOUN in South-West, Nigeria?

Table 1: Percentage Distribution of Respondents' ICT competence (N=571)

S/N	ICT Competence	SA (%)	A (%)	D (%)	SD (%)	\bar{x}	Std. Dev.
Basic computer skills							
1	I understand the concepts and basic functions of computer operating systems	66.0	28.2	2.5	3.3	3.57	.703
2	I can download and install software on a computer hard disk	55.7	31.5	7.4	5.4	3.37	.842
3	I can copy files from hard disk to storage devices and vice versa	61.6	29.2	4.9	4.2	3.48	.775
Group Mean = 3.49							
Proficiency in using Productivity Software							
4	I can type a document using Word processing software	72.2	21.5	4.4	1.9	3.64	.659
5	I can use Excel spreadsheet software to organize information	42.4	37.1	13.8	6.7	3.15	.898
6	I can use Power point software to present information	38.0	33.8	18.2	10.0	3.00	.981
Group Mean = 3.26							
Electronic Communication skills							
7	I can handle e-mail program and compose email messages using MS Outlook, Gmail or Yahoo	66.0	22.8	6.3	4.9	3.50	.819
8	I can attach files and open file attachments from an e-mail message	62.0	24.9	7.9	5.2	3.44	.849
9	I can organize email folders	50.3	27.7	13.5	8.5	3.20	.972
Group Mean = 3.38							
Internet skills							
10	I can set up an Internet connection and connect to the internet	63.7	23.6	7.9	4.7	3.46	.831
11	I can use web browsers and search engines (e.g. Firefox, Google) to find information on the Web effectively.	70.1	19.6	6.3	4.0	3.56	.785
12	I can participate in electronic conferencing.	37.8	35.9	17.3	8.9	3.03	.954
Group Mean = 3.35							
Grand Mean = 3.38							

N = 571; SA=Strongly Agree, A=Agree, D= Disagree, SD= Strongly Disagree

The result on Table 1 reveal that the students' ICT competence were high with a grand mean of 3.38 on a 4 point scale. The students' basic computer skills (\bar{x} = 3.49), electronic communication skills (\bar{x} = 3.38), Internet skills (\bar{x} = 3.35) and proficiency in using productivity software (\bar{x} = 3.26). The students' ability to use Power point software had the lowest mean of 3.00. This is an indication that the students even though

fares well in using productivity software, there is still room for improvement in ICT competence of undergraduates through training and retraining.

Research Question 2: To what extent do the students of the National Open University of Nigeria in South-West, Nigeria use EIRs?

Table 2: Extent of use of EIRs (N=571)

Use of EIR	A great extent (%)	Some extent (%)	Little extent (%)	Never (%)	\bar{x}	Std. Dev
World Wide Web	67.1	20.0	4.7	8.2	3.46	.916
Electronic mail	58.5	24.7	7.9	8.9	3.33	.957
E-news	44.5	34.0	10.2	11.4	3.12	.995
E-book	42.4	33.6	12.8	11.2	3.07	.998
E-reference	30.8	35.9	16.6	16.6	2.81	1.051
E-journal	27.7	36.1	20.5	15.8	2.76	1.027
E-Archives	28.9	35.7	16.6	18.7	2.75	1.069
CD-ROM	27.3	35.6	19.8	17.3	2.73	1.045
Library OPAC	29.1	29.9	22.1	18.9	2.69	1.048
Online databases	22.8	32.6	20.5	24.1	2.54	1.091
Grand Mean	2.93					

The result on Table 2 shows the distribution of the responses of the students of NOUN on the extent to which they use EIRs. The results show that the means of EIRs like the World Wide Web, Electronic mail, electronic news and E books were greater than 3 on a scale of 4 while the mean value for all other EIRs as well as the grand mean were below 3.0. This suggests moderate use of electronic information resources by the respondents.

Research Question 3: What factors constrain the use of EIRs by the students of the National Open University of Nigeria in South-West, Nigeria?

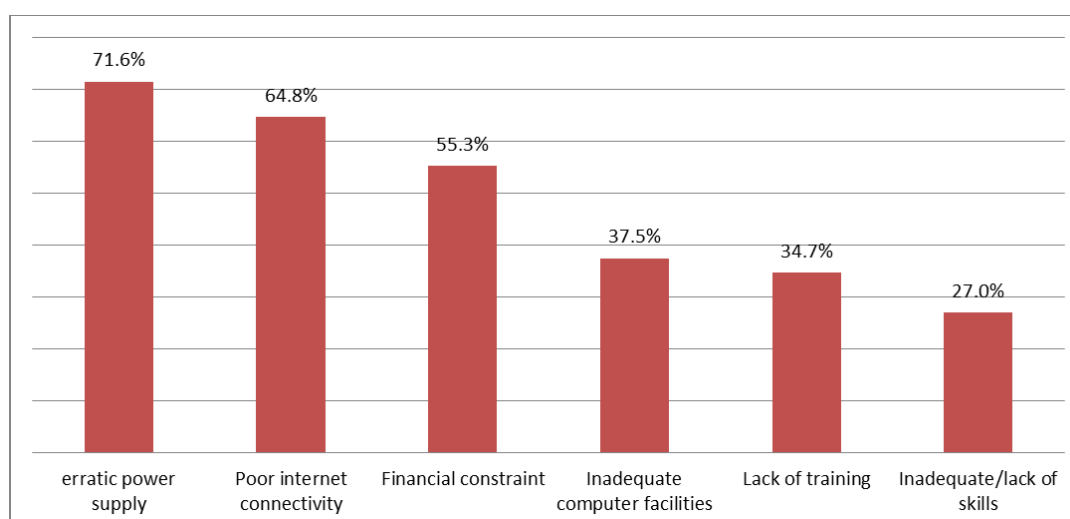


Figure 1: Constraints to Use of EIRs

Figure 1 shows that the most common constraint to the use of electronic information resources identified by the students is erratic power supply (71.6%). This is followed by poor internet connectivity (64.8%) and financial constraints (55.3%). Most of the students did not perceive inadequate/lack of skills as a

constraint which confirms the result on Table 1 that they have high level of ICT skills. It is obvious from the results that erratic power supply and poor Internet connectivity pose serious limitation to the use of EIRs by the undergraduates of NOUN in South-West Nigeria. This is a reflection of the situation in Nigeria which demands urgent attention.

Hypothesis 1: There is no significant relationship between ICT skills and Use of EIRs by the students of National Open University of Nigeria in South-West, Nigeria.

Table 3: Relationship between ICT skills and use of EIRs

Variables	\bar{x}	SD	N	r	P
ICT Skills	40.3958	6.4346	571	.389*	.000
Use of EIRs	29.2469	7.2531			

*Sig. at $p < .05$

A Pearson Product-Moment Correlation was run to determine the relationship between ICT skills and use of electronic information resources. Table 3 shows that there is a significant, positive correlation between ICT skills and use of electronic information resources ($r = .389, p < .005$). This implies that as students' ICT skills increase, the use of EIRs also increases. The hypothesis is therefore rejected.

Hypothesis 2: ICT competence will not significantly influence the use of EIRs

Table 4: Influence of ICT competence on Use of electronic information resources (N=571)

Model	R	R ²	Adj. R ²	Std. Error of Est.	Df	F	T	Sig.
(Constant)					1	101.40	6.479	.000
ICT skills	.389	.151	.150	6.6879	569		10.070	

Dependent variable: Use of EIRs

The result of simple linear regression analysis carried out to determine the influence of ICT competence on the use of EIRs by the students shows that ICT competence accounted for 15.0% of the variance in the use of electronic information resources (Adj. $R^2 = 0.150$, $F(1,569) = 101.40$, $p < .05$). ICT competence had a significant influence on the use of EIRs. Hence, the null hypothesis was rejected.

4 Discussion of Findings

The findings on ICT competence of the NOUN undergraduates revealed that the respondents are highly skilled as they rated themselves high in all the levels of ICT competence. The finding corroborates those of Omotosho, et al. (2015) which revealed that students have the basic computer skills and possess Internet searching skills. The findings also agree with the study by Ojeniyi and Adetimirin (2013) and Odede and Odede (2016) which revealed that majority of the undergraduate students are highly skilled in the use of ICT and its applications such as the Internet and e-mail. The finding is however inconsistent with those of Gakibayo, Ikoja-Odongo and Okello-Obura (2013) who revealed inadequate ICT skills by undergraduate students.

Finding on the extent of use of EIRs revealed a moderate use of electronic information resources by the students of NOUN in South-West, Nigeria. The World Wide Web, electronic mail, e-news and e-books were mostly used. The findings concurred with the findings by Quadri, Adetimirin and Idowu (2014) which revealed that the students in Nigerian universities use e-books, e-journals and e-news mostly and

that they often utilize electronic information resources but contradicts those of Emwata and Nwalo (2013), Omoike (2013) and Abubakar and Adetimirin (2015) who found out low usage of electronic information resources by undergraduate students.

With regard to the challenges militating against the use of EIRs by the Polytechnic faculty, finding showed revealed that the greatest impediment was erratic power supply as indicated by majority (71.8%) of the students. This is in line with the findings of Omoike (2013) Abubakar and Adetimirin (2015) who found that erratic power supply constitute a major hindrance to effective use of e-resources in Nigeria. The findings also agree with (Quadri, Adetimirin & Idowu, 2014) that poor Internet connectivity is a factor that affects access to and usage of electronic information resources. This finding is inconsistent with the finding by Omosekejimi et al. (2015) who revealed low usage of electronic information resources by the students of Federal University of Petroleum Resources, Effurun (FUPRE) due to lack of competence required to navigate the modern technology. It is of note that the students did not consider inadequate or lack of skills and lack of training as challenges to use of EIRs. This finding corroborates that of Toyo (2017). By implication, regular power supply, stable Internet connection and adequate finance are facilitating conditions that enhance the use of e-resources.

The finding also confirms that of Abubakar and Adetimirin (2015) that a strong positive relationship exists between ICT competence and use of EIRs. ICT competence enables promotion of e-learning, usage of e-journals, e-books and other e-resources. They averred that lack of computer literacy or ICT competence affects the use of electronic information resources. When students are highly skilled in ICT use, they will find it easy to access and use e-resources. This implies that the more skilled students are in ICT and the more they are computer literate will result in effective use of e-resources.

The study findings annulled all the hypotheses as it found that there is a significant positive relationship between ICT competence and use of electronic information resources. It also revealed that ICT competence had a significant influence on use of electronic information resources by the undergraduates of NOUN in South-West, Nigeria.

5. Conclusion

ICT is an enabler of national development as it affects virtually all aspects of human endeavor and most especially, the education sector. Provision of electronic information resources is paramount to learning in this digital era, as it saves cost and time and also gives rise to quality education. This study has revealed that undergraduates in NOUN, South-West Nigeria are highly skilled in the use of ICT which have reflected in their use of electronic information resources (EIRs). Thus, ICT competences are fundamental to effective use of EIRs and learning which has been made flexible through the use of ICT. The electronic information resources mostly used by the students are the World Wide Web, E-mail and e-book. In spite of the great benefits electronic information resources hold for students and researchers, erratic power supply, poor Internet connectivity and financial constraint are impediments to their effective use for learning and research. It can be said that, a sustainable national development in Nigeria can be achieved through the use of ICT in education which also calls for the development in ICT competence of higher education students. Education and lifelong learning of Nigerian citizens should be upheld by the Nigerian government because there cannot be any development in a nation without the development of human resources.

6. Recommendations

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

1. The management of the NOUN should invest in alternative source of power to ensure maximum use of electronic resources by the students.

2. The library of the NOUN should periodically organize training and re-training to sharpen the ICT skills of students to increase the use of EIRs.
3. Also, the management of National Open University of Nigeria should invest in ICT infrastructural facilities such as the computers, the Internet, e-library, mobile technologies to match the global trends in higher education.

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