A REVIEW ON THE FACTORS AFFECTING TEACHER ADOPTION OF ICT IN NIGERIA

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Abstract
Corruption in Nigeria has contributed positively to the difficulties in improving educational system. The emergence of internet technology and deployment of ICT into the education systems have created a new demand in expanding the teacher's skill especially in the developing countries like Nigeria. This study aims to investigate the factors affecting teacher's adoption of ICT in teaching and learning in Nigeria secondary schools. This quantitative study adopted used a survey method and recommended ways to assist the school management and teachers in implementing ICT in the teaching and learning process.
Keyword: Nigeria education system, Teacher adoption of ICT, Teaching and learning process.

Introduction

Transparency International in 2014 was surveyed 163 countries the result shows that Nigeria was ranked the 38th most corrupt country in the world. Corruption is the hydra-headed monster and a cankerworm that undermines the fabric of all societies. It constitutes a serious threat to good governance as well as development programme aimed at improving educational systems in Nigeria. Corruption in Nigeria wears many kinds of

unattractive and dirty clothes. The situation has made educational system backwardness as the money which would have been used to provide infrastructures in our schools are being diverted into the pocket of small group of persons.

In this regard, Egbochuku (2003) explained that Nigeria has become very notorious in corruption, and it is massively taking place in low and high positions. There have been some complaints and reports of reckless looting of Nigeria's treasury by accounting officers of all tiers of government, parastatals and agencies, banks, oil sector, and construction companies, among others, that so much hard-earned money is being siphoned out of the country and stocked in foreign bank accounts. Most of the Nigeria ex-governors have been severely indicted for gruesome involvement in money laundering. Such monies are supposed to be used for developmental projects which stimulate investments, production, savings and employment, and invariable enhance good standard of living of the citizens. Instead, many people have continued to wallow in abject poverty, unemployment and shortages of infrastructures in schools and poor maintenance culture of public utilities (Kwabena, Kwame and Roderick, 2013).

Globalisation and the diffusion of ICT in all spheres of life have created a social system which is driven by knowledge and powered by technology. Information and communication technology (ICT) is playing a major role in shaping 21st century global education and making impact on secondary school education. The federal ministry of education created its ICT department in February 2007, notwithstanding several government agencies and other stakeholders in the private sector having initiated ICT-driven projects and programmes to impact all levels of the educational sector (OseiAgyeman, 2007). The quality of education depends on the qualities and abilities of teachers (Strong, James 2007). Well trained, component, and committed teachers can exceptionally deliver

their knowledge to their students. Today, the quality of teaching and learning is also reflected with the used of teaching aids such as computer, multimedia application in teaching and learning processes however the effectiveness of these tools on technology is not fully proven throughout its implementation at schools. Thus this study will investigate the factors that may affect adoption and use of ICT in teaching and learning processes particularly at the secondary school level.

Several factors such as lack of electricity, internet connection, training and infrastructure affect the adoption of ICT in the Nigeria education system. These factors act as barriers and challenge that slowing down the schools from adopting ICT in their classes. The ICT skills of teachers are one of the critical factors which must be improved. The ICT barriers in Nigeria secondary school system are similar to other countries. These barriers include societal rigidity, poor ICT education and corruption. These barriers limit the access of teachers and students to ICT education. The accessibility of ICT depends on the availability of infrastructures that support technology. The integration of ICT in the education system were largely depends on the availability, competency, and attitude of teachers toward using the technologies in the class, (Vongalis-macrow, 2006). Facts showed that the developed countries like England and Australia have made quite a considerable investment in ICT development and to integrate with their education systems by having a well formulated ICT national policies and specific strategies (Kamau, 2012). The contents of the national curriculum statements of the countries like, the UK, the USA and Australia have provided clear evidence for this paradigm shift from traditional teaching and learning approach to the infusion of ICT as a significant tool in the school curricula (Tinio, 2003). Some of the African countries have ICT policy aimed at improving educational system through ICT adoption into teaching and learning. As a

part of the global village, after 1994 the South African government introduced an education system which made provision for the same education for all South African learners. The policy also prescribed for the use of ICT by all schools to improve and enhance teaching and learning. This is supported by the policy statement (White Paper, 2004; GED, 2007; Kwabena, Kwame and Roderick, 2013) which stipulates that all South African learners must be ICT capable for the future. As part of the new social structure and the aspiration of making the South African Society an information society, computer laboratories with internet connectivity have been established in many urban schools to enhance and improve the quality of teaching and learning and to realise the national objective of the information society (White Paper, 2004; Kwabena, Kwame and Roderick, 2013).

On the other hand the developing countries like Nigeria and others are rapidly and heavily investing in ICTs despite the other challenges they face for instance insufficiency of infrastructure, resources, knowledge workers and technical skills with regards to ICT especially in rural areas where most schools are located (Roy, 2005).

ICT in Nigeria education system
Nigeria as a nation has recognized the potential of ICT in their educational system well on time. A national policy on computer education was developed to cater the need for ICT deployment and integration with the Nigerian educational system (Yusuf, 2005). In Nigeria, the ICTs usage is increasing and its growth is quite dramatic (Tella.2007). However, at school level, the ICT implementation is still lacking due to various factors. For instance, schools cannot afford to have ICT facilities due to high investment cost, lack of basic infrastructures such as electricity supply, lack of adequate training, and inadequate funding of internet connectivity (Owoloabi, 2013).

A research by Omoniyi and Quadri in 2013 reported that majority of teachers in secondary schools do not have the required competency in the use of ICT (Omoniya. 2013). Another study by Obakhume, (2011) most of the teachers lack knowledge, competence to use ICT to facilitate teaching and learning process (Sukamolson.2012). Rangaswamy & Gupta, (2000) describes adoption as the decisions that individuals make each time that they consider taking up an innovation. ICT can be adopted in various ways; ICT does not only present innovation in the field of education, but also enhancing the efficiency of the teaching and learning.

Review of related literature
There are many factors identified as hindrances to the adoption of ICT into teaching and learning. Research literature on the adoption of ICT into teaching and learning shows that it involves a large number of influencing factors (Mumtaz, 2000). Rogers (2003) indicates that, "Technological innovations are not always adopted rapidly, even when the innovation has proven advantages". Pelgrum (2001) listed personal ideas about the contribution that ICT can make to the processes of teaching and learning. He again argued that, teachers' lack of knowledge and skills; insufficient number of computers and ICT infrastructure; and difficulty in integrating ICT instruction in classrooms as some of the factors that impede ICT integration in education. In a similar study, Ely (1993) identified: dissatisfaction with the status quo, existence of knowledge and skills, and availability of resources as major conditions relevant to ICT integration. In comparison, the two studies reveal something similar because existence of knowledge and skills relates to factor relating to teachers lack of knowledge and skills. Also availability of resources is similar to insufficient number of computers and ICT infrastructure. Finally dissatisfaction with the status quo is somehow related to

difficulty in integrating ICTs instruction in classrooms. Mooij and Smeets (2001) also assert that, if teachers are not confident in their competence to handle computers, their willingness to use ICT may be affected. Use of ICT in education for the purpose of teaching, research and learning is a kind of innovation because Rogers (2003) use innovation and technology interchangeably. Rogers (2003) identified five innovation characteristics that influence the decision to adopt innovation as: relative advantage, compatibility, complexity, trialability, and observability. He believed that when an innovation is perceived by users as having greater relative advantage, compatibility, trialability, observability, and less complexity, the innovation will be adopted

More rapidly, it can therefore be said that, relative advantage, compatibility, complexity, trialability, and observability have direct relationship with ICT adoption and use while complexity has an inverse relationship with ICT adoption. Butler and Sellbom (2002) also examined the factors affecting teachers in adopting new teaching technologies and barriers emerging during adoption. This research concluded, among other things, that trust in technology has been identified as the most important factor in teachers' decisions whether or not to adopt ICT. Know-how, difficulty in learning and time required to learn was also an important factor in adoption. Believing that technology enriches and improves education, difficulty using technology and management support appears as other factors affecting adoption of ICT into teaching and learning.

Challenges to ICT education in Nigeria
The opportunities that ICT provides for teaching and learning processes also come with challenges. ICT has a key role to play in enabling the education industry to manage complex information flows and to integrate them towards effective

educational planning and development. Although ICT holds great potentials in supporting and augmenting existing educational as well as national development efforts in Nigeria, several challenges remain. These challenges include:

1. Resistance to change from traditional pedagogical methods to more innovative, technology-based teaching and learning methods, by both teachers and students. The attitudes of various managements in and outside Secondary schools towards the development of ICT related facilities such as the Internet and procurement of computers is rather slow in some instances, and in others there are no aids or support by the government at all (Albirini, 2006).
2. Inadequate ICT infrastructure including Computer hardware and software and bandwidth/access.
3. Lack of qualified ICT personnel. Most of secondary school teachers lack computer literate and ICT experts that would support and manage the Internet connectivity and/or application of computing in the teaching-learning process. The cost of equipment in a country like Nigeria with economy recession and seriously devalued currency is enormous. However, it should be noted that the problem might not be the funds nor the technology but rather the corruption and will on the part of government (Itegboje and Okubote, 2002).
4. Nigeria lacks the necessary infrastructural facilities to benefit from ICT. Again, most of the ICT infrastructures such as internet, telefax, e-mail are dependent on mobile telecommunication service provider, NIPOST (Nigerian Postal Agency) and Kaduna electricity. These services are epileptic in delivery and attract unbearably high bills.

Factors that discourage ICT adoption and use

Many studies investigate why teachers do not use ICT in their teaching and learning process in their school as according to (Winnans and Brown, 1992; Dupagne and Krendl, 1992; Hadley and Sheingold, 1993; Kwabena, Kwame and Roderick, 2013). Identifies the following factors were from their studies as factors that prevent teachers from using technology in their schools.

- ➢ Lack of teaching experience with ICT;
- ➢ Lack of on-site support for teachers using technology;
- ➢ Lack of help supervising children when using computers;
- ➢ Lack of ICT specialist teachers to teach students computer skills;
- ➢ Lack of computer availability;
- ➢ Lack of time required to successfully integrate technology into the curriculum;
- ➢ Lack of financial support.

Methodology

The study was mainly quantitative and was aimed at investigating the factors affecting teachers adoption of ICT in teaching and learning in Nigeria secondary schools, Sokoto State was selected area of study it has three (3) senatorial zone, namely as follows central senatorial one, western senatorial zone, Eastern senatorial zone. Were the teachers serve as respondents selected from each zone, Questionnaires were the instrument used to collect data from the respondents were seventy (70) from CSZ, sixty (60) from WSZ and fifty (50) from ESZ. Statistical Package for Social Sciences (SPSS version 20) was used to analyse the data collected. Total of one hundred and eighty (180) questionnaires were distributed. All the 180 distributed questionnaires were completely filled and returned in time. This therefore gave a response rate of 100%

which was reliable and valid, since the design involve obtaining information from a wide section of respondents at once without need to follow up the respondents for further information (Amin, 2005).

Results

The table below shows frequencies and percentages of demographic information of respondents collected based on gender, Age, Education level, Internet access, In-service Training, teaching and computer experiences, and computer usage. It revealed also that majority of the teachers have access to internet from outside their school environment.

Table 8.2.4.1: Demographic information on respondents

Variables	Category	Frequency	Percentage %
Gender	Male	115	63.9
	Female	65	36.1
Age	25-30	75	41.7
	31-35	54	30.0
	36-40	32	17.8
	41 and Above	19	10.6
Education level	NCE	125	69.4
	Bsc Ed	45	25.0
	Msc Ed	10	5.6
Internet access	Inside school	13	7.2
	Outside school	167	92.8
In-service Training	Yes	130	72.2
	No	50	25.7
Teaching experience	Below 5yrs	35	19.4
	5-9 years	72	40.0
	10-14 years	43	23.9
	15-20 years	12	6.7
	20 and above	18	10.0
Computer Experience	1 year	25	13.9
	2-4 year	49	27.2
	5-9 years	60	33.3
	10-14 years	29	16.1
	15 and Above	17	9.4
Purposes of Computer usage	Internet browsing	85	47.2
	Social Media	60	33.3
	Teaching and learning	35	19.4

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Table 8.2.4.2 shows teacher knowledge of browsing, downloading and uploading material from the internet, while on the other side it revealed that teachers need to carry out some improvements to the skills in preparing lesson by using ICT; it also shows that there is need to increase ICT skills in the area of creating learning material using multimedia in order to be capable for the ICT adoption in teaching and learning process.

Table 8.2.4.2: Teachers skills and knowledge

Variables	VP (%)	P (%)	F (%)	G (%)	VG (%)	Means	Std. Dev
Browsing the internet, downloading & up loading	1.1	8.5	4.7	30.8	50.9	4.36	0.839
Producing simple document using MS word processing	6.4	8.1	10.4	30.1	45.0	4.09	1.118
Create a presentation using Ms PowerPoint	9.3	7.1	10.4	18.0	55.2	4.03	1.336
Preparing my lessons using ICT	18.2	43.7	18.0	8.7	11.3	2.91	1.306
Creating learning using multimedia	12.7	45.9	26.8	8.7	5.8	2.89	1.133
Communicating with others via social network, email etc	6.5	10.6	9.3	35.0	37.5	4.33	0.758

Table 8.2.4.3: Factors that affect ICT in teaching and learning

Variables	SD (%)	D (%)	N (%)	A (%)	SA (%)	Means	Std. Dev
I think it is important to improve my computer skills	1.1	4.4	3.3	33.9	57.4	4.42	0.841
Insufficient and irregular power supply (electricity) in my school	2.2	3.3	1.6	36.1	56.8	4.42	0.860
I will use educational technologies if it is offered in the classroom	4.9	4.4	1.6	31.7	57.4	4.32	1.053
Inadequate number of computer in my computer lab	7.1	9.8	1.6	33.3	48.1	4.05	1.239
There is insufficient amount of in-service training in ICT	5.5	6.0	2.2	72.7	13.7	3.83	0.931
Lack of technician to helps teachers with the computer hardware and software	5.5	3.8	1.1	74.3	15.3	3.90	0.896
ICT equipment such as overhead projector is	14.8	59.6	2.7	18.0	4.9	2.39	1.093

available in my classroom							
My schools has its own computer networks	54.1	31.7	1.6	9.8	2.7	1.75	1.069
I feel too old to learn how to use computer	31.1	59.0	1.1	4.4	4.4	1.92	0.943

From Table 8.2.4.3, the teachers were asked to express their view about factors affecting ICT adoption in teaching and learning on five (5) likert scale ranging from SD, D, N, SA and A. The table shows descriptive statistics based on perception of the factors that affect ICT in teaching and learning. It revealed that the actual state and levels of ICT skills of the teachers in secondary schools need to be improved. They face many challenges while adopting ICT in teaching and learning at secondary schools. It shows that current situation will help in providing things to do for achieving the ideal state of ICT adoption at secondary schools level.

Conclusion

An ICT development framework must be established to improve the competency of teachers in their ICT adoption in secondary school. This framework can represent the essential characteristics of ICT development, which can guide teachers and other education stockholders. This study can be used as a basis for the development of teacher's ICT skills. Further study related ICT skill standards for teachers should be set up at all level which offers strategies for planning training needs and staff development programs in order to equip them with essential skills for adoption and use of ICT tools in their classrooms.

Recommendations

The study recommends that:

Government should provide a comprehensible and practicable action plan to increase the usefulness of ICT adoption for teachers of secondary schools.

It also recommends that the proposed strategies for enhancing the effective utilization of ICT facilities in teaching and learning at secondary school level should be provided. Teachers should be motivated to be committed to the students learning and to their own development; increase their access to sufficient quantities of technology.

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