

Information Communication and Technologies Education: A Veritable Tool for Sustainable Future and Integration into Nigeria's Development Agenda

Emmanuel O.Adu

*Faculty of Education, University of Fort Hare, South Africa
E-mail: eadu@ufh.ac.za*

KEYWORDS Information Communication and Technologies. Education. Sustainable Future. Integration. Development,.Agenda

ABSTRACT Information Communication and Technologies (ICTs) is a life wire for national development. All sectors across the globe depend on ICTs for positive impact and most especially for economic growth and development. Hence, this study investigates the impact of ICTs on sustainable future and integration into Nigeria's development agenda. Four research questions were asked from 1000 participants who were randomly selected from six universities representing the six geopolitical zones in Nigeria. The validated structured questionnaire whose reliability co-efficient value was 0.87 was used to elicit information from all the participants. The descriptive statistics of percentage was used to analyse the data collected. The findings revealed among others the efficacy of ICTs for sustainable development. This study concludes that ICTs, for sustainable development has emerged as the veritable vehicles for sustainable future of not only Nigeria but all other countries. Therefore, the study recommends that ICTs should be properly annexed into Nigeria's development agenda.

INTRODUCTION

The central role of technology in shaping our society is not disputed by many. Information communication and technologies (ICTs) have played an important role in the development of our society. This development ranges from computer application in business, education, transport, government, medicine, sports, to mention but a few (Klopper 2007). The application of ICTs for the past five decades have developed and grown in many workplaces, and at home. Information communication and technologies have shaped the way we live, work and play. In this century, ICTs have made information available at our finger tips. Globalisation has linked us together with the use of ICTs. All spheres of lives have changed dramatically with the help of ICTs. Social, economic, political and human developments have become the epitome of useful living in the society.

Information communication and technologies have brought a great relief to all. Communication has become more frequent than ever before, barriers to communication have been eradicated, and distance problems no longer exist (Pérez and Murray 2010). In education sector across the universe, ICTs have brought enormous renaissance to research, teaching, learning methods and assessment/evaluation methods. It has facilitated cordial relationship and interaction amongst learners, teachers and learn-

ing materials with the help of gadgets like smart phones, iPods, internet services, Ipad, black-board, v-drive to mention but a few. Mobile phones have replaced notebooks or scribblers, students used their leisure time judiciously with these gadgets.

We may not have complete control over how ICTs influence our society, but we can decide how we may want to see ICTs implemented for sustainable future development through education. ICTs in education have brought a complete transformation by given new orientation that promotes developmental agenda in Nigeria (Adu et al. 2014). Studies have shown that in the advanced countries where ICTs are at its best have issues with behavioural changes that can support sustainable development (Roschelle et al. 2008; Adu et al. 2014). This calls for more robust policies on the use of ICTs for sustainability. Take for instance in developing countries, a study by Tella and Adu (2014) revealed that students did not use ICTs for academic purposes alone, rather they use it for social interaction and fraudulent activities.

Education and ICT for Sustainable Development

Education has played a pivotal role in sustainability with the use of ICT. Many people are talking using the most modern and fashionable handset, telecommunication has become a per-

sonal fashion accessory. The arrivals of mobile phones make it easier for sending pictures or video footage. Not only that ICTs help many in all kinds of domestic services, the use of close circuit television cameras (CCTVs) have drastically reduced crime and stimulate security of lives and properties which is an agenda for sustainable future in many countries and not only Nigeria. Scholars all over the world make use of teleconferencing to present their conference papers while remaining in their base. Connection is very possible and networking is enhanced with the help of ICTs (Klopper 2007:5).

When talking about sustainable development one focuses on economic growth and development. ICTs have helped many developing countries in term of investment, trade liberalisation, bilateral trade agreement to mention but a few. All these promote sustainability and development. Increasing number of people will be willing to invest in ICT provided they believe ICTs will enable them to break the clutch of poverty and isolation on their lives (Klopper 2007:4). According to Klopper, ICTs have been well established and should make organisation more efficient. Information technology investment will continue at an increasing rate and will turn out to be successful (p.6). ICT has the capability of pushing business organisation forward. It is seen as a central way of achieving cost effectiveness in business endeavours.

Objective of the Study

With the aforementioned points, this study examines the impact of information Communication and Technologies on sustainable future and integration into Nigeria's development agenda and to look at the challenges for proper use of ICT in sustaining future and integration into Nigeria's development agenda

Research Questions

The following research questions are answered in this study;

1. Of what impact is ICT to Nigerians?
2. Does attitude affect the utilization of ICT?
3. How can ICT be integrated into the agenda of Nigeria?
4. What are the challenges of using ICT for sustainable future and development agenda?

Literature Review

Sustainability and Sustainable Future

The maintenance of infrastructure and social amenities for economic growth is known as sustainability. Human resource development and economic advancement are key factors to sustainable future. For any country to sustain her future, such country must adapt modern technologies and connectivity in order to promote business growth. The concern of business with generating a demand for their product or service, selling and delivering their product to the customer, getting paid, managing the relationship with the customer, conforming to policy requirements, even maintaining relationship with shareholders or stakeholders need the facilitation of ICTs (Klopper 2007: 7)

When the environment is conducive and economy can be improved, future sustainability is inevitable. It is imperative to note that in order to sustain economic future, the business enterprises must be allowed to manage the application of the technology within the context of corporate strategy, process, measures, and reward system. ICTs should be built in to support business change because a lot of organizations are finding it difficult to change due to dynamism of technologies. This often led to poor system commensurate with ICT challenges for business use (Klopper 2007: 7).

Sustainable Future

The maximum utilization of these amenities (infrastructure and social amenities) in more conscientious efforts brings about brighter and sustainable future. So, the application of ICTs opens up some significant issues that will warrant many people to face variety of choices. With this, our basis values and the type of society we are or want needs to be created. No matter the society created, the issue is how we can be more efficient in the market place. In today's world, we look after technology for its sake forgetting about the human impact and their contribution to the use of the technology. Although individual differences and preferences are there and we must be sensitive to it, that is why Klopper (2007:9) says " we could create a society where we use technology to enable people to overcome difficulties, to provide high technologies to people

with disabilities, to provide assistance and education and to minimize exclusion". He later concluded that ICT can be used to inform those who are struggling for freedom. Those who are asking themselves question about their feeling when they buy things from machine or withdraw money from ATM, or getting information from web than from real people. The answers to those questions give people satisfaction and promote healthy living for sustainable future. This is why a sustainable society is all encompassing. It involves the totality of individuals, families and communities (Adu et al. 2014).

A Sustainable Economy

On the other hand, a sustainable economy involves finding solution to the disparities and unequal distribution and accessibility to resources in a given country. In as much as we know about social stratification and classes in our society, there is need for break even. Nonetheless, a sustainable economy is the one that promote equity and fair treatment across board. It promotes sound judgment in making quality decision to maximize satisfaction. The social well-being of the citizens is very important and it is one of the indices of measuring sustainable economy. We are in the midst of scarcity, and decision making is very crucial in our needs out of numerous wants. Our decision has a lot to do with the quality of life that we live.

Sustainable Development, Social Responsibility, and Equity

Similar to sustainable economy succinctly described above, individual's social responsibility accounts for the attainment of sustainability. It is part of our social responsibility to make a good decision and not deviant to policies and regulation governing the economy of our country. Our norms have a lot to do in promoting equity. Understanding individual differences, respecting other opinions, put other first "Ubuntu" feelings for others and selfless services to the community are the watchdog for sustainable development.

RESEARCHMETHODS

Research Approach and Design

In this study, the survey research design of descriptive nature is adopted to investigate the

impact of information, Communication and Technologies on sustainable future and integration into Nigeria's development agenda and to examine the challenges in using ICT for future sustainability and integration into Nigeria's development agenda. The study also employed quantitative approach by using structured questionnaire to elicit information from the respondents.

Population

The universities lecturers in Nigeria constitute the population. In Nigeria there are six geopolitical zones. This is described under the sample below.

Sample and Sampling Techniques

Stratified sampling technique was used to select the universities and samples for this study. Nigeria was stratified into six zones, out of which a university is randomly selected from each zone. This includes:

1. Nnamdi Azikwe University. Anambra (SE)
2. Rivers State University of Science and Technology. Cross River (SS)
3. University of Ibadan. Oyo State (SW)
4. Abubakar Tafawa Balewa University. Bauchi (NE)
5. Bayero University, Kano (NW)
6. University of Ilorin. Kwara State (NC)

The total number of two hundred (200) lecturers was taking from each university making the total number of one thousand two hundred lecturers (N=1200).

Research Instrument

A self-administered structured questionnaire was used to elicit information from the respondents on how ICT serves as a veritable tool for sustainable future and integration into Nigeria's development agenda.

Validity and Reliability of Instrument

The instrument of four parts is validated by the experts in the field of ICT and education. Its reliability was measured using Crombach alpha with co-efficient value of 0.87.

Analysis of Data

The information gathered from the respondents was analysed using descriptive statistics

of percentage only. Out of the total number of questionnaire administered by using on-line with internet facilities one thousand (1000) was returned which represent 83 percent.

RESULTS AND DISCUSSION

Research Question 1

Of what impact is ICT to Nigerians?

Table 1 indicates that most of the respondents are very much aware of the significant impact of ICT on economic growth and development (95%). 30 percent said they did not aware while 2 percent did not make any decision about the question. According to Adu et al. (2014), the mass media and social media have a greater role to play in disseminating information and creating awareness about ICT and its positive impact.

Table 1: Impact of ICT awareness to Nigerians

S. No.	Response categories	Number of respondents	Respondents percentage
1.	Yes	950	95
2.	No	30	3
3.	Undecided	20	2

Research Question 2

Does attitude affect the utilization of ICT?

Table 2: How attitude affect the Utilization of ICT

S. No.	Response categories	Number of respondents	Respondents percentage
1	Positive	900	90
2	Negative	40	4
3	Indifferent	60	6

Table 2 reveals that 900 (90%) of people sampled said Nigerians have positive attitude to the

use of information and communication technology. 4 percent was of the opinion that Nigerians attitude are negative whilst 6 percent are indifferent. Klopper (2007) opined that behaviour and attitude of ICT users has a lot of impact in sustaining future and economic development. This was shy Adu and Olatundun (2013) encourage the school management to give adequate training to the employees about the professional way of using ICT. It was also found out by Adu and Tella (2013) that many students misused cell phones and abuse its use. This is a matter of attitude. A positive attitude stimulates maintenance culture and maintenance culture propels sustainable future.

Research Question 3

How can ICT be integrated into the agenda of Nigeria?

Table 3 reveals the respondents' opinion about integrating ICT into Nigerian agenda. 39 percent representing 390 respondents out of 1000 said the only way to integrate ICT into Nigeria agenda is through government annual budget. 260 (26%) are of the view that this can be done through the implementation and incorporation of ICT philosophical basis. From the total respondents, 24 percent representing 240 out of 1000 respondents was of the opinion that ICT can be integrated into Nigerian agenda through education and public enlightenment. However, just 11 percent believe that integration can be done through the supply of social and infrastructure amenities.

Research Question 4

What are the challenges of using ICT for sustainable future and development agenda?

Table 4 reveals that 94 percent of the respondents accepted that poor communication network; poverty, illiteracy, inadequate qualified

Table 3: ICT integration and Nigerian agenda

S.No.	Response categories	Number of respondent	Respondent percentage
1	Education of the people and enlightenment	240	24
2	Through government/annual budget	390	39
3	Provision of necessary infrastructure	110	11
4	Implementing/incorporating the philosophical basis of ICTs	260	26
5	Total	1000	100

Table 4: Challenges of using ICT for sustainable future and development agenda

<i>S.No.</i>	<i>Response categories</i>	<i>Number of respondent</i>	<i>Respondent percentage</i>
1	Poor communication network	60	6
2	Poverty	50	5
3	Illiteracy	80	8
4	Inadequate qualified ICT personnel	70	7
5	Inadequate public funding	40	4
6	Epileptic supply of electricity	90	9
7	All of the above	940	94
8	None of the above	0	0

personnel and epileptic supply of electricity are the challenges facing the use of ICT for sustainable future and development agenda in Nigeria. In separating these variables according to the respondents' answer; 9 percent agreed that epileptic supply of electricity is a challenge. 80 respondents (8%) indicated that illiteracy is a challenge while 7 percent was of the opinion that inadequate qualified ICT personnel are also part of the challenge. Similarly, 6 percent attributed it to poor communication network while 5 percent indicated poverty as a major challenge to the utilisation of ICT for sustainable future and development. The least of them all which accounted for 4 percent believed that inadequate public funding is one of the challenges. This was in line with the findings of Adu et al. (2014) that says underdeveloped countries are bedevilled with poor social and infrastructure amenities, hence, hampers their development (Pérez and Murray 2010).

Useful answers were provided to the research questions from the findings of this study, this was in agreement with the responses of the people sampled. ICTs have played a pivotal role in modern day activities without which it will be very difficult to progress in all ramifications of life. The findings also revealed that ICTs are veritable instruments for sustainable development and economic advancement. There is need for sporadic development to commensurate with the dynamism of ICT in this 21st century. This will go a long way in enhancing healthy contentions and global competition among not only Nigeria but other developing countries (Nwosu and Ogbomo 2009).

The efficient use of ICTs is determined by attitude of the users in developing countries. There is need for the maximisation of ICTs to the fullest in order to bring about economies of scale. The sustainability also depends on the ICTs

policy put in place by the government. The changes in these policies must be adequately communicated by the designated authority. No wonder while some respondents are indifferent in their responses to this (Tella and Adu 2009).

Nonetheless, one of the tables reveals the respondents' opinion about integrating ICT into Nigerian agenda, where 39 percent representing 390 respondents out of 1000 said the only way to integrate ICT into Nigeria agenda is through government annual budget. 260 (26%) are of the view that this can be done through the implementation and incorporation of ICTs philosophical basis. From the total respondents, 24 percent representing 240 out of 1000 respondents was of the opinion that ICTs can be integrated into Nigerian agenda through education and public enlightenment, this means that ICTs are inevitable to national development. In the same vein, 94 percent of the respondents accepted that poor communication network; poverty, illiteracy, inadequate qualified personnel and epileptic supply of electricity are the challenges facing the use of ICT for sustainable future and development agenda in Nigeria. That shows that government and whosoever responsible must take these challenges into consideration.

CONCLUSION

The application of ICTs opens up some significant issues that will warrant many people to face variety of choices. ICTs can be used to inform those who are struggling for freedom. Those who are asking themselves question about their feeling when they buy things from machine or withdraw money from ATM, or getting information from web than from real people. This paper also revealed that ICT can only play its rightful when we are socially responsible and social responsibility enables us to make a good decision

and not deviant to policies and regulation governing the economy of our country. Our norms have a lot to do in promoting equity. Understanding individual differences, respecting other opinions, put other first “Ubuntu” feelings for others and selfless services to the community are the factors that enhance sustainable development. There is also an awareness of the significant impact of ICT on economic growth and development. The behaviour and attitude of ICT users has a lot of impact in sustaining future and economic development. Therefore, ICTs, for sustainable development has emerged as the veritable vehicles for sustainable future of not only Nigeria but all other countries.

RECOMMENDATIONS

The study revealed that poor communication network; poverty, illiteracy, inadequate qualified ICTs personnel and epileptic supply of electricity are the challenges facing the use of ICT for sustainable future and development agenda in Nigeria. Therefore, government, stakeholders, policy makers etc. should try to find ways of eradicating these challenges. There is also a need for private and public partnership in providing ICT because ICT provision and maintenance are very costly for government alone to provide. The social media has some role to play in sensitising and orientate public about the benefits and hazard of using different technologies. Finally, ICT utilization and maintenance policies should be put in place and there should be a law enacted to punish those who misuse or abuse these technologies and ICTs should be properly annexed into Nigeria’s development agenda.

REFERENCES

- Adu EO, Adelabu O, Adjogri SJ 2014. Information and Communication Technology (ICT): The implications for sustainable development in Nigeria. *World Conference on Educational Multimedia, Hypermedia and Telecommunications* (1): 50-58.
- Adu EO, Tella A 2013. A comparison of social networking sites use among undergraduate students in two selected African Universities: University of Ilorin, Nigeria and BA ISAGO University College, Botswana. In: R McBride, M Searson (Eds.): *Proceedings of Society for Information Technology and Teacher Education International Conference 2013*. Chesapeake, VA, USA: AACE, pp. 5170-5176.
- Adu EO, Olatundun SA 2013. The use and management of ICT in schools: Strategies for school leaders. *Education Journal of Computer Science and Information Technology (EJCSIT)*, 1(2): 10-16.
- Klopper R 2007. What kinds of organisations do we want to build in Africa with information communication technology? In: Sam Lubbe (Ed.): *Managing Communication Technology Investments in Successful Enterprises*. Chocolate Avenue, Herrshey, USA: Idea Group Publishing.
- Tella A, Adu EO 2014. An assessment of the undergraduates’ participation in the online discussion forum. *Mediterranean Journal of Social Sciences (MJSS)*, 5(7): 333-344.
- Tella A, Adu EO 2009. Information communication technology (ICT) and curriculum development: the challenges for education for sustainable development. *Indian Journal of Science and Technology*, 2(3): 55-59.
- Nwosu O, Ogbomo EF 2011. ICT in education: A catalyst for effective use of information. *Pacific Northwest Library Association, PNLA Quarterly*, 75(4): 54.
- Pérez J, Murray MC 2010. Generativity: The new frontier for information and communication technology literacy. *Interdisciplinary Journal of Information, Knowledge and Management* 5(2010): 127-137.
- Rochelle J, Tatar D, Shechtman N, Knudsen J 2008. The role of scaling up research in designing for and evaluating robustness. *Educational Studies in Mathematics*, 68(2): 149-170.