

EDUCATION AND INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AS IT RELATES TO ENTREPRENEURSHIP IN NIGERIA

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Abstract

This study explores the relationship between education and ICT, and entrepreneurship in Nigeria. It was discovered that happenings in education affects ICT and entrepreneurship and vice-versa. Although commendable effort has been made, yet much needs to be done on the area of funding, subvention and sponsorship for quantitative and qualitative education and ICT development. Epileptic supply of electric power and inadequate provision of telecommunication facilities and general infrastructural decay were fingered as critical factors hindering the development of ICT, education and entrepreneurship. Conducive macro-economic environment will facilitate target growth in these sub-sectors.

Education is regarded as vital indices for national development. It is the most important enterprise in all civilized society. In line with the above views, Federal Government of Nigeria in her National Policy on Education (NPE) (1981) adopted education as an instrument per excellence for effecting national development, and states that education will continue to be highly rated in our national development plans. Among, the aims of National Policy on Education (2004:16) is “preparation for useful living within the society”, which was articulated to include acquisition of appropriate skills, abilities and competencies that will equip the individual for life in the society.

The philosophy of Nigerian Education also give obvious indication that education is the primary vehicle in meeting the goals of any nation as clearly indicated in some of the

national goals such as “*A United, strong and self-reliant Nation; A great and dynamic economy; and A land full of bright opportunities for all citizens, as well as the principle of development of individual into a sound and effective citizen*”.

Thus, in the process of effective “*change in the mental and physical behaviour; and upgrading the accumulated knowledge, skills and attitudes*”, education invented Information and Communication Technology (ICT) in 1969 which becomes a product of education, critical instrument/aid to education and business (entrepreneurship), and entrepreneurial venture itself.

Today, new development brought about by ICT is increasing; the need to do more and perform more efficiently has also brought us to this stage of development. ICT provide users with the privilege of exploring the world from their offices, library, even at home for operation, services and in search for information. Information and Communication Technology machines particularly computer, is a desired prerequisite for connectivity and operationalization of ICT, for instance, where an internet service is available, acquisition of knowledge, banking services and surveillance does not pose any form of difficulty. ICTs offer unique and exciting opportunities for teaching and learning.

Selinger (2000) as cited in Oghuvwu (2010) observed that all forms of learning are enhanced by ICT, especially problem solving situations and by so doing, students can learn to

develop skill such as being systematic, logical and deductive through engaging themselves with carefully selected computer based tasks. ICT provides opportunity for entrepreneurs to go into new ventures as well as render services to existing enterprises.

The need to tailor Nigerian educational system into self sustaining entrepreneurial outputs started emerging in the mid 1980s when it became clear that our educational policies was titled towards products that are artisans and job seekers. This was exasperated by economic collapse of the time, youth and graduate unemployment, large scale layoff of workers and early retirement as a result of structural adjustment policies and adverse economic trends in the country. The entrepreneurship which would have salvaged the situation was not encouraged. The ICT that is expected to service the education and the entrepreneurship sector started officially in 2001 with the introduction of National Information Technology Development Agency (NITDA). According to Osei (2007), the Federal Ministry of Education created its ICT department in 2007.

Therefore, Education, ICT and Entrepreneurship Development are among the critical issues for the advancement of Nigerian economy. The educational policy until recently were devoid of skills for ICT and entrepreneurship. The philosophy for self-reliance such as creating a new cultural and productive environment that promote pride in primitive work and self discipline, encouraging people to take part actively and freely in discussions and decisions affecting their general welfare, promoting new sets of attitudes and culture for the attainment of future challenges, was not on ground. And ICT has not been fully assessable in a way that it forms the bedrock of knowledge driven economy in Nigeria. While the duo of education and ICT has not feed the

entrepreneurship appetite of Nigerians in a way it will begin to produce the expected result.

It should be noted that education and ICT are not relating with entrepreneurship in isolation; the unhealthy and unstable macro-economic environment in Nigeria has affected virile entrepreneurship development. Based on the foregoing, the objectives of this study are:

- (a) To examine the relationship between education and ICT;
- (b) To find out how ICT and education affects entrepreneurship;
- (c) To identify the reason for the hitches in entrepreneurship development.
- (d) To suggest applicable solutions to the problems affecting entrepreneurship education in Nigeria.

The Concept of Education

The word 'Education' is knowledge or abilities gained through teaching/learning. It involves structured effort, time, and money towards the education of children. Education, on one aspect, is seen as the act or experience that has formative effect on the mind, character or physical ability for the purpose of accumulating knowledge, skills and values. It brings 'up', 'forth' or 'out' what is learnt in the behaviour of the individual. Education means different things to different people. In general terms, it is the process of transmitting societal cores, values and desirable attitudes from one generation to another. It is the process of teaching and learning in schools and college for the development of knowledge and skills so as to prepare individuals to live happily with themselves and others in the society.

If education encrypts an influence that produces a change in the physical and mental behaviour, then it must be in the positive so as to enables one to perceive accurately, think clearly and act effectively to achieve self-selected goals and aspirations. Education, therefore, is more properly defined as a process of cognitive

cartography, mapping your experiences and finding a variety of reliable routes to optimal states of mind when you find yourself in non-optimal states. (Berg 2011; Teacher's mind Resources, 2011; Goetz, Adler and Gibney, 1998).

During the 21st century, new innovations called Information and Communication Technology (ICT) was brought into education such as white boards, iPads, iPods, Laptops, e-skills, e-library etc. It is pertinent that a nation grows faster, which harnesses the potentials of its youths and educational aspect of life as a most veritable tool towards the emancipation of the poor.

Concept of Information and Communication Technology ICT

Information and Communication Technology (ICT) has become an important tool and indispensable aid for running a nation's economy. It is one of the most potent forces that have come into prominence in the 21st century and it is fast becoming a vital engine of growth for many enterprising individuals and organizations. Globally, ICT is the automation of processes, controls and information production using computers, telecommunications, software and ancillary equipment, such as automated teller machine, modem and debit cards- (khalifa, 2000) as cited in Akinlolu (2010). It is a term that generally covers the harnessing of electric technology for the information needs of a business at all levels. Services that have been revolutionized through the use of ICT include banking transactions, telecommunication, surveillance, education and other services collectively termed e-skills. ICT has provided self-service facilities from where prospective customers can obtain services on-line. Communication Technology deals with the physical devices and software that link various computer hardware components and transfer

data from one physical location to another (Laudon and Haudon; 2001) as cited (Ibid).

The use of Internet transforms access to information for the business world, libraries, education and individuals; a few of the most popular ones include e-mail, www (World Wide Web), FTP (File Transfer Protocol), Usenet and Telnet. Internet and its technology has continues to have a profound effect on promoting the sharing of information especially in academic world. According to Oghuvwu (2010), the new ICTs can extend knowledge and education to the poor and marginalized people, and more so, as the Internet increasingly gains prominence as a tool to deliver better education outcomes effectively.

There is no doubt that the impact of ICT in the educational sector has been particularly revolutionary and it has facilitated an efficient and effective learning and research environment. Besides, its use in supporting teaching and learning; its required in the key administrative activities of planning, monitoring, controlling and management. Ibidapo (2003) as cited in Ogbuvwu (2010) noted that the educational system especially at present is going through phenomenal growth and changes in students enrollment, number of academic programmes, number of personnel with negative indices of cultism and activism among students and staff unions. He stated further that these changes pose enormous challenge to the administration of educational institutions particularly, the universities, polytechnics and colleges of education, as the much needed funding is diminishing.

Concept of Entrepreneurship

Entrepreneurship is the practice of starting new organization particularly new business, generally in response to identified opportunities. Ayeni and Adesua (2010) quoting Drucker (1970) see entrepreneurship as all about

taking risk. According to them, the behaviour of the entrepreneur reflects a kind of person willing to put his/her career and finances on the line so as to take risk in the name of an idea, spending much time as well as capital on an uncertain venture. It means setting up and running a business in a profitable and sustainable manner. Another view of entrepreneurship is that it is the process of discovering, evaluating and exploiting opportunities.

Thus, entrepreneurship goes beyond entering a new business but encompasses ability to take responsibilities for action and decision and to creatively solve problem. Doing things differently or more creatively, for instance, using e-skills to develop software programs that help business people uncover new ways of reducing expenses. Therefore, entrepreneur is an innovating individual who has developed an ongoing business activity where none existed. Entrepreneur is not just a sole proprietor but one that can in significant way absorb the unemployed labour, demanding a high productivity and services from his business in a competitive market where he must make profit from. Meredith (1983) as cited by Arogundade (2011) defined an entrepreneur as a person or persons who possesses the ability to recognize and evaluate business opportunities, assemble the necessary resources to take advantage of them and take appropriate action to ensure success.

ICT and Education in Nigeria

Until recently, the Federal Republic of Nigeria has no specific policy for ICT in education, and the Ministry of Education created its ICT department only in February 2007 (Osei, 2007). Before now, though, several government and other stakeholders in the private sector have initiated ICT driven projects and programmes that impact all levels of the educational sector. Actually, Nigeria started implementing ICT policy in April 2001 with the establishment of

the National Information Technology Development Agency (NITDA), to implement ICT development in the country (Osei, 2007). The policy empowers NITDA to enter into strategic alliances, joint ventures and to collaborate with the private sector to realize the specifics of the country's vision of "Making Nigeria an Information Technology (IT) capable in Africa and a key player in the information society by the year 2005 through using IT as engine for sustainable development and global competitiveness". Some of the objectives of ICT policy according to Akinlolu (2010) are as follows:

1. To ensure that ICT resources are readily available to promote efficient national development.
2. To guarantee that the country benefits maximally, and contributes meaningfully, by providing the global solutions to the challenges of Information Age.
3. To empower Nigerians to participate in software and ICT development.
4. To encourage local production and manufacture of ICT components in a competitive manner.
5. To establish and develop ICT infrastructure and maximize its use nationwide.
6. To empower the youth with ICT skills and prepare them for global competitiveness.
7. To integrate ICT into the mainstream of education and training.
8. To create ICT awareness and ensure universal access in promoting ICT diffusion in all sectors of national life.
9. To create an enabling environment and facilitate private sector (National and multinational) investment in ICT sector.
10. To encourage government and private sector joint venture collaboration.

11. To develop human capital with emphasis on creating and supporting a knowledge-based society.
12. To build a mass pool of ICT literate manpower using the NYSC, NDE and other platforms as a train-the-trainer scheme for capacity-building.

The above items in the objectives of ICT policy in Nigeria shows that the policy is fashioned towards complementing and developing the educational and productive (entrepreneurial) base of the nation. Items c, e, g, h, k and l have particular impact on the content of curriculum in Nigerian education; and item a, b, d, f, i and j also have a particular impact on the development of entrepreneurship in the country

The National Council on Education coordinates planning, policy and finance for the education sector in Nigeria. The council consists of the Commissioners and Ministry of Education and the Joint Consultative Committee on Education (Sesan and Akinsanmi 2010). Education administration is shared between the local, state and local governments viz:

1. **Primary Level:** Local governments
2. **Secondary Level:** State governments
3. **Tertiary/University Level:** Federal government.

Nigeria's objective for primary education did not elicit the knowledge of ICT until recently. Emphasis was placed on the following:

- i. Widening access to basic education.
- ii. Eliminating inequalities in the enrolment between the urban and rural populations.
- iii. Ensuring greater retention in schools.
- iv. Ensuring long-term permanent literacy for those children who have completed the programme.

While ICT knowledge is now being evoked in the vision set for primary school pupils, Nigeria's education ministry is yet to design comprehensive ICT policy for education. Though the Ministry's ICT department was established recently, several different initiatives by government agencies and the private sector to introduce and promote ICTs in education are in the offing (Osei, 2011). The major challenge to these programs is the general sporadic and insufficient supply of electric power in the country.

In the primary education level, due to energy problem, the government embraced the US\$100 Xo laptop computer for Nigeria's 24 million public primary school children, though one million was ordered of the cranked laptop that does not need external power supply. The laptops are yet to appear in the country as experts continue to debate the appropriateness of the ICT approach for Nigerian primary schools. Some of them favour establishing computer laboratories for all schools. Others said instituting child-per-laptop ownership schemes is better. However, some private elementary schools, particularly those in high-class zones have computer laboratories.

In the secondary education level, School-Net Nigeria, a non-profit organization, committed to addressing the use of ICT in secondary schools and mobilizing Nigeria's human and financial resources for the purpose of using ICTs in education, with the support of several government ministries, creates learning communities of educators and learners to use ICTs to enhance education. It has in collaboration with MTN, established ICT laboratories/cyber café s in four schools in some states in each of the four-phase project using local Internet services providers (ISPs). School-Net, in collaboration with BusyNet (another computer company) also setup ICT laboratories/cyber café in some other states.

Zinox computers in collaboration with Microsoft, is set to revolutionize ICT usage in education from the primary to the university with focus on students, lecturers, and the institutions themselves (Osei Opcit). Zinox provides the computers at highly discounted prices, First Bank of Nigeria is bank-rolling the project and ICT laboratories are set up for schools that repay in two to three years while lecturers repay the cost of their laptops in one year. Over 320 schools has benefited from Zenith Bank's ICT for Youth Empowerment scheme which focuses on assisting Nigerian youth to bridge the digital divide through early introduction to ICT. It organizes an annual ICT empowerment forum for youth that attracts about 2000 secondary and tertiary levels students, with lots of ICT gift to participants.

In the tertiary education level, Osei (2011) observed that National University Commission (NUC) prescribed personal computer (PC) ownership for universities as follows:

- i. One PC to every four students
- ii. One PC to every two lecturers below the grade of lecturer I
- iii. One PC per senior lecturers
- iv. One notebook per professor/readers.

While some universities have achieved a better ratio for faculty, the same cannot be said for the PC to student ratio. Some universities such as Nnamdi Azikwe University (NAU), Obafemi Awolowo University (OAU) and others has embarked on progressive application of ICT to all its functions and services – academic, research and administrative. The OAU has more than 6,000 users on more than 1,000 computers distributed in 15 computer laboratories across the campus while NAU has achieved a better ratio for the PC – to student. University of Jos (UNI Jos) has set the pace for content development and e-learning in addition to campus networking. In collaboration with

African Virtual Open Initiatives and Resource (AVOIR) and the Carnegie Corporation (USA), UNI Jos has developed e-learning programmes especially for medicine by e-learning website of the department of anatomy that permits students to undertake virtual electronic dissections – the first of its kind in medical training in the world. (Ayandele, 2010). Lecturers abroad have facilitated courses as part of the ICT initiative sponsored by A.G. Levant's.

The National Open University of Nigeria (NOUN) has 29 study centres. Each study centre has a computer laboratory/cyber café equipped with at least 25 computers in a Local Area Network (LAN) configuration. The centres according to Arogundade (2011) are not yet completely connected to Repository, Reproduction, Distribution and Administrative Headquarters (REPRODA) through a Wide Area Network (WAN) to enable the mainstreaming of e-learning. Noun's ICT applications presently cover; management of students records, learner management system, communication (SMS, E-mail, Internet etc), delivery of human resources and finance courses. Also British council has initiated a Digital Library Projects (DLP) to assist universities in digitizing their libraries.

Recently, acquisition of basic ICT skills and capabilities have been made mandatory as part of national minimum standard for teachers education at the Nigeria Certificate of Education and first degree in education levels, while some universities have made ICT skills a requirement for continuing and graduating students. It should also be noted that Microsoft signed a Memorandum of Understanding (MOU) with Education Trust Fund (ETF) under Microsoft Partners in Learning Programmes (Pil) to develop ICT skills in teachers (Osei, 2011). They are also jointly building a teacher-training methodology that will become the future standard for schools, with the hope to bring technology to bear in our schools. Microsoft also

signed MOU with ETF on cyber detection and prevention stipulating that Microsoft will share information, train and build capacity of Nigeria enforcement agencies to fight cyber crime. It will benefit from training sessions for law enforcement officers and representatives of Economic and Financial Crimes Commissions (EFCC). Osei (2011) also noted that partnership with CISCO has seen to establishment of 22 CISCO training academics all across Nigeria, with the intention of expanding further training facilities and academics in the country.

Education/ICT and Entrepreneurship in Nigeria

Within this context education and ICT will be used as one word since education teaches ICT and the later is a part of education and its used to enhance learning. Education/ICT is a manpower industry producing the knowledge and skills necessary for development. Education/ICT is derived from the needs and demands of the society thus it is seen as a microscopic reflection of the total society needed for both stability and continuity.

Entrepreneurship is the creative and innovative response to the environment which occurs due to change in behaviour (education/ICT) in any area of human endeavour. Such areas include Business, Industry, Agriculture, Education, social work and services of all types. Business and entrepreneurial development was listed as one of the four strategic goals of British Universities (Ayeni & Adesua, 2010). Entrepreneurship education seeks to provide people with the knowledge, skills and motivation to encourage entrepreneurial success in a variety of settings. The impact of education and ICT on entrepreneurship is regarded as engines of economic growth and innovation. As such, the impact of the later on entrepreneurship is among the ultimate determinants of economic performance and development.

According to Sesan and Akinsanmi (2010) citing UN Report (1997), poverty is a plague affecting people all over the world; it is long time phenomenon that has been in existence as old as man himself. In a bid to reduce poverty, it was fingered that a poor educational and ICT competence which does not guarantee good employment for the people only leads to legacy of poverty. In response to this, Poverty Alleviation Programmes were introduced by government, donor agencies as well as Non-Governmental organizations at all levels to eradicate or reduce poverty by encouraging entrepreneurship. Though a lot has been done, the extent of growth or improvement in entrepreneurship development has not been encouraging.

Through a study carried out in Bangladesh by Asian South Pacific Bureau of Adult Education (ASPBAE), it was discovered that the objective of Education/ICT is to contribute towards alleviation of poverty through creation of ICT-based employment/entrepreneurship opportunities, and production of trained and quality personnel in the ICT field. Education/ICT also build people's entrepreneurial and ICT skills through quality training, to the creation of a better tomorrow based on self-sustaining entrepreneurship knowledge. For example, the introduction of graphics card has improved the level and variety in 3D graphics production or virtual reality. This has given room for fresh entrepreneurship in TV cards and other new innovations that are leading us into the future. In the software industry in Nigeria, the end users demand for better security has brought about new inventions and entrepreneurship to Window XP and other highly enhanced security operating systems. According to Adewale (2011), these enhancements often come with a corresponding venture into better accessories and hardware to operate this software.

The need for entrepreneurial development in rural areas makes education and ICT all the more crucial. Distance education using ICT infrastructures can enhance and complement entrepreneurship in local resources. Unfortunately, in terms of telecommunications infrastructure, rural and poor areas are the most neglected, making ICT-based distance education difficult. Without them effective distance education using internet is not feasible.

Education/ICT can be used to assist people in their current economic activities such as farming, trade and other entrepreneurial activities. For instance, farmers could greatly increase productivity using information on improved technologies, agricultural inputs, weather and markets. Students from the local communities who generally learn computer skills could be trained to serve as information intermediaries for older people.

In an agricultural country like Nigeria, the internet may become an important source of information for farmers. For instance, they can download important information like:

1. What are the benchmark best quality seed of each crop?
2. What are the diseases by which animal or plants may be attacked? How can they be recovered?
3. Plant related manures, fertilizers, insecticides etc.
4. Recent research activities related to agriculture.
5. Information on how to market products using e-marketing.
6. Information about the weather.

This information will guide a farmer on what aspect of farming to venture; it will help an entrepreneur to increase his productivity and export his product in developed countries, earning much than he does at present.

The new information economy offers many possibilities for ICT-enabled business such as numerous services jobs out sourced by

major foreign investment in Nigeria. With the commencement of online credit card transaction, more profitable opportunities exist for small-scale enterprises in business-to-business and business-to-government markets, especially with business-to-consumers e-commerce. Areas in which Education and ICT has impacted on entrepreneurship development are as follows: the Business Centres, Graphics Centres, Music Studies, the Internet Centres, Computer Training Centres, Computer Technicians, Web Design, Web Hosting, Internet Employment Agency Services, Internet Advertisements, Being the Middleman (B-2-B), Internet Tourist Agency and Internet Traveling Agency.

Challenges to Education, ICT and Entrepreneurship in Nigeria

The challenge is lack of electric power and telecommunications, infrastructure in a substantial part of the country. Mobile telecommunication currently covers 80% of the national territory but mobile phone companies generally power their base stations with electric power generators, since the Power Holding Company of Nigeria (PHCN) is unable to supply them with power. This phenomenon is prevalent nationwide and constitutes a bottleneck to entrepreneurship development and effective country-wide development of ICT in education.

Poor funding is another challenge to Education, ICT and Entrepreneurship development in Nigeria. For instance in 2007 National Open University of Nigeria (NOUN), for the first time received government budgetary allocation. So do other related government agencies bemoan the non-existent or low level of government subvention. The ICT revolution is yet to attain that critical mass required for it to register the necessary impact in teaching, student and entrepreneurship in Nigeria. Most libraries of Polytechnics, Nursing and Health Institutions, Colleges of Education and Universities are still at the infancy stage of library automation or what

may be regarded as planning state; internet services cannot be fully operational in these institutions.

Poor maintenance of instructors, lecturers and technologist is another challenge to qualitative education, ICT and entrepreneurship development. Lack of instructional and infrastructures and missing between the economy and the e-skills set provided in education, hinder a potentially well-designed programme.

Conclusion

Qualitative and quantitative education is one resource that entrenches empowerment and entrepreneurship among the poor in societies. Evidence has shown that people want access to knowledge and opportunities instead of charity to fight conditions of poverty. The capacity to acquire and generate knowledge, including the recovery and upgrading of traditional knowledge is the most important factor in the development of entrepreneurship. Thus, the new information economy offers many possibilities for ICT-enabled business, and ICT should be brought to the doorstep of the poor; particularly the rural ones. In so doing, traders and entrepreneurs will finally grasp information that will enhance their ventures, improve education, drive the economy and bring sustainable development for Nigeria.

Recommendations

In terms of quality education, ICT and entrepreneurship development, some improvements need to be made with regard to the effectiveness of regulation and creation of a more supportive policy to encourage steady electric power supply and comprehensive rural telecommunication development. It remains the responsibility of government to move beyond promises to the actual modeling of a conducive environment. On the other hand, the private sector must cooperate with the academic

institutions and its agencies in capacity building. ICTs hold the potential of boosting education, strengthening development efforts, providing a platform for socio-economic growth and changing the face of employment in Nigeria.

If an entrepreneur invest in ICT knowledge-based service unit, he or she will promote ICT, and economic development and if it is achieved through education, we acquire knowledge of ICT skills such as word-processing, data management, internet skills, time management, marketing, basic accounting, micro-business management, joint venture etc. Thus, the neglect of ICT and entrepreneurship education is rubbing the nation of the contribution their graduate would make on the economy. Furthermore, schools need to fine-tune their curriculum to offer courses that enable students meet this generation academic requirement with trade and ICT as integral content. Evidently, Nigeria is lagging behind in preparing her workforce for the challenges of the rapidly changing global economy.

Adoption of ICT has influence the content and quality of education and entrepreneurship operations. ICT presents great potential for business and academic process re-engineering in Nigeria. Therefore, it is in the interest of government to do the following:

1. Government and other education stakeholders should make sure that educational programme at all levels are made relevant to provide the youths and graduates with the needed ICT and entrepreneurial skills.
2. Government should give adequate attention to entrepreneurship and ICT development through the provision of convenient economic environment to encourage individual or private participation in business.

3. Facilities should be built to promote ICT and computer-aided entrepreneurship education at all levels.
4. Teachers are the most vital resource in promoting modernization and higher standards; their recruitment, training, deployment and appropriate incentives are critical to ICT skills and entrepreneurship education system in Nigeria.
5. Modern and effective ICT networks need to be built to support traditional methods of teaching and learning and to enlarge the quantity and range of education and training on entrepreneurship, for example through distance learning; while culture of entrepreneurship in education and ICT, there will be a rippled multiplier effect on the quality of education, quantity and quality of ICT and entrepreneurship development.

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