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Achieving Nigeria's Economic Diversification, Recovery and Sustainable Development Through Information Technology (IT) Skills Acquisition and Application

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ABSTRACT

Economic diversification is an issue that has been over-discussed and overlooked in Nigeria for a long period of time. The economic quagmire in which Nigeria found itself in now would have been averted if the government has seriously listened to warnings and advice on economic diversification by economic experts. Information Technology (IT) has the greatest potentials for achieving economic diversification, recovery and sustainable development. This paper, therefore, identifies various IT skills in agriculture, commerce and industry that could be employed to achieve the above stated economic goals.

Keywords: Diversification, Sustainable, Potential, Development and Recovery

INTRODUCTION

Information Technology is any technology that facilitates the capture, processing, transfer and exchange of information [1]. There is no gain-saying the fact that Information Technology (IT) has revolutionized the way we live, think and do business. It has changed and is still changing the way we do things in our homes, offices, schools and other places.

Speaking on the importance of technology as a change agent [2], contended that intellectual capital and technology now rule the world and that natural resources such as gold, diamond, oil etc are no longer the primary determinant of wealth. In view of the above, almost all businesses and organizations especially in advanced countries have become aware that they must adapt to the changing technology or be left behind. To remain afloat in the competitive world, Nigeria should adapt to technology that is prevalent in advanced countries.

To a large extent, any study of Information Technology is a study of change. The impact of IT is diverse and some of the changes it brings about are profound. It has created online collaborative tools which bring diverse and virtual team for productive and team focused activities. Information Technology is the fastest growing technology in the world. The

capital investment on IT facilities, projects and services in major sectors of the world economy has been on the increase in the last sixteen years. Almost every aspect of economic and physical development is powered by IT in advanced countries.

[2] observed that the quickest route out of economic stagnation is Information Technology skill acquisition. He noted that Japan, South Korea and recently China represent the clearest modern examples of countries, once regarded as backward and underdeveloped, which have changed their fortunes by investing in Information Technology.

RELATIONSHIP BETWEEN IT AND ICT

Both Information Technology (IT) and Information and Communication Technology (ICT) are defined according to how people perceived them. The term ICT might be strange to some people, confusing and even misunderstood by others. For many there may appear to be no difference between IT and ICT – hence they use the two terms interchangeably.

According to Mason (2015) [3], IT and ICT are often used interchangeably by those in the computer industry, but these terms are different in definition. IT stands for Information Technology and ICT stands for Information Communication Technology. These are very closely related, but the terms signify two different areas of study or industry. Most simply put, ICT falls under the IT umbrella and refers to the specific area of IT that has to do with communications. IT is a terminology widely used in industry, while ICT is used in Education

- Information Technology (IT) and Information Communication Technology (ICT) are functionally similar in the sense that both border on information capture, processing and dissemination. The difference lies in the fact that IT is wider than ICT in scope. Information Technology encompasses both old and new technologies of information capture, processing, and exchange. But ICT borders in recent technologies of information gathering, processing and transfer. The term ICT was introduced in 1997 by a committee set up by the Britain Government to investigate the impact of IT in British schools. It was during this time that the committee added communication to IT.

INFORMATION COMMUNICATION METHODOLOGY

This borders on the method applied in communicating data/information to desired destination. Communication technologies tie together and communicate information between various devices. Computer per se, if not networked, cannot transmit information from one place to another.

Communication tools include fax machine, cellular phones, landline phones, television, radio, computer networks, microwave, satellite. These tools are used to send information to the desired location. For information to be communicated between sender and receiver, telecommunication technology must be applied. Telecommunications are devices and techniques used for transmission of information over a long distances through wire, radio/satellite without damaging or loss due to noise and interference.

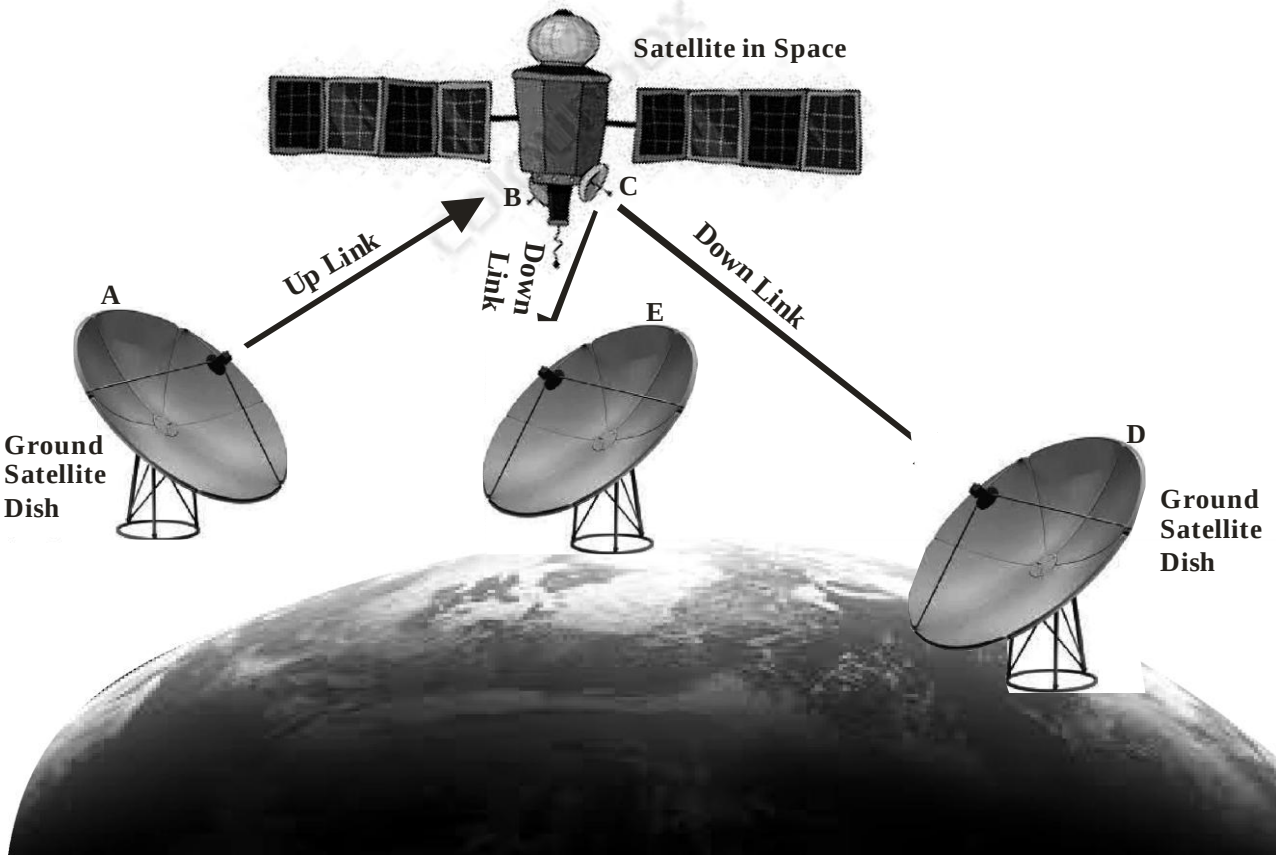
Satellite communication is one of the most popularly extensively used technology now. Communication satellites have some interesting properties that make them attractive for many applications. A communication satellite can be thought of as a big microwave repeater in the sky.

THE WORKING OF COMMUNICATION SATELLITE.

If you want to send information from one side of the earth to another, there are 3 stages involved. The first is the uplink, where data or information is beamed up to the satellite from the ground station on Earth (an Earth-based satellite dish). The second stage is that the satellite on getting the information or signal processes it using a number of transponders (amplifiers, transmitters etc). These boost the incoming signals and change their frequency (i.e. giving them enough strength to continue) so that the incoming signal don't get confused with the outgoing signal.

Finally (stage 3), there is down link, through which data/information is sent back to another ground station elsewhere on earth. It, thus, bounces from one side to the other.

Although there is usually just a single uplink, there may be millions of downlinks, if many people are receiving the same signal at once.



Looking at the diagram above, a ground based satellite transmitter dish (A) beams a signal to the satellite's receiving dish (B). The satellite boosts the signal and send it back down to Earth from the transmitter dish (C) to a receiving dish somewhere else on Earth (D) and (E).

Since the whole process happens using radio waves, which travel at the speed of light, it is so fast that it takes signals few seconds to get to its destination.

INFORMATION TECHNOLOGY SKILLS AND ECONOMIC DIVERSIFICATION, RECOVERY AND SUSTAINABLE DEVELOPMENT.

We can achieve sustainable, development, economic recovery and diversification through ICT skills acquisition and application in the following areas:

Agriculture Nigeria has diverse climate that encourages cereal crops production in the North and root crops production in the South. If IT or ICT skills are integrated into our agricultural practice, it will lead to fast economic diversification. It has been observed that the quickest route out of economic stagnation is IT skills acquisition. Examples were given with Japan, China and South Korea as countries that have achieved sustainable economic development through IT skills (Odachi, 2009)[1]. Sustainable development, economic recovery and diversification could be achieved by integrating ICT skills in Agriculture in the following ways:

(i) Timely and Up to Date Information is an essential ingredient in agricultural development. Therefore integration of IT in agriculture can be utilized for providing accurate, timely, relevant information and services to farmers, thereby creating a nice environment for more profitable agriculture.

(ii) With IT facilities, farmers can be updated on temperature, humidity and rainfall with additional parameters such as atmospheric pressure, solar radiation, wind speed and soil moisture. In India ingen technologies provide this information to farmers.

(iii) Prompt ICT information on weather, pests and diseases can prevent calamity experienced in agriculture in recent times, due to vagaries of weather and attacks of pest and diseases.

(iv) The use of ICT portal or agricultural website helps to disseminate vital agricultural information such as crops management techniques, fertilizers and pesticides and many other agricultural related materials.

(v) Still in India, “aQUA technology” (almost all Questions Answered) is applied to assist farmers. It is a farmer expert question and answer data base supporting Indian languages. It is an online informatic lab that answers farmers queries, based on

location, season, crop and other information provided by farmers (Mukesh, Deepati and Kamini, 2010)[4].

(vi) ICT offers more avenues for sharing of knowledge with stakeholders of different types and with different situations. Apart from canning and other methods of food preservation, various communities have their local ways of preserving agricultural products. This type of information could be shared among farmers. Information sharing is achieved through computer networks which helps in dissemination of research products and messages.

(vii) With Global Positioning System (GPS) farmers can map and analyze their fields for characteristics such as acidity and soil type. GPS can be used to control costs and boost crop yield.

(viii) Inadequate capital is one of the major problems of agriculture in Nigeria. Some of the farmers, especially small scale farmers are unaware of the existing loan facilities due to poverty and low level of literacy. ICT can assist farmers by providing vital information on existing loan facilities.

(ix) With e-commerce farmers can sell their products online, instead of the use of middlemen who reduce their profit. In this regard the farmer can sell his products right inside his farm. What the farmer needs do is to register his location and products, to ensure that products ordered online can be traced to a particular farmer (Samuel, 2010)[5]. This has widened the market for farmers.

(x) With ICT, one can get information on market potential of some agricultural products. For instance, instead of selling unprocessed groundnuts, you could further add value to it by further processing the nuts into peanut, butter and cooking oil.

INFORMATION TECHNOLOGY IN INDUSTRY

Information Technology is at the heart of successful enterprises worldwide, and manufacturing industries are no expectation. Though IT, all industries must consistently aim at the five (5) R's

- produce the right product, with right quality, in the right quantity at the right price, and at the right time (Kirishamurthy and Sundaresan, 1999)[6]. Correct and timely information is key to meeting these goals. Information technology database management systems, enterprise resource planning system, and simulation and computer aided design have become indispensable to most manufacturing enterprises today.

When looking at the practice of information technology in the manufacturing industry, a wide range of use-cases are revealed. Everything from the robotic lines of an automobile plant to accounting software used by a small parts shop falls under the umbrella of information technology.

According to Rana (2013) [7], information technology has contributed to the progress of manufacturing industry in the following ways:

(i) It has provided features such as barcodes, which has improved quality control.

(ii) Digital displays and electronic controls increase precision and speed during manufacturing processes.

(iii) Information Technology is extremely used in the manufacturing industry to reduce cost of product design, supply chain management and manufacturing processes itself.

(iv) Information technology has reduced the amount of labour required to produce product, improve its quality and allow manufacturers to respond faster and more effectively to their customer demands.

(v) The use of optimization algorithms has saved materials and time.

INFORMATION TECHNOLOGY AND COMMERCE

The importance of information technology in business/commerce cannot be overemphasized. There is no gainsaying the fact that innovation is a great way to success in this digital age. According to Butt (2015)[8], the path of innovation in business means doing something different, smarter or better that will make a positive difference in terms of value, quality or productivity by using emerging or proved technologies of the world. He observed

that the technology which has already proved itself in the last two decades is information technology (IT), as it has dramatically changed the lives of the individuals and organizations.

Presently, online shopping, digital marketing, social networking, digital communication, real time services and cloud computing etc are the good examples of change which came through IT.

Today, accurate business planning, effective marketing, instant customer support and long term business growth cannot be achieved without IT.

In modern age, it has been proved that digital marketing is a great tool which let you promote your products or services to the global market while sitting in the comfort of your remote office or home.

Internet technology has enabled us to communicate with millions of potential or existing customers in real time. Information technology provides many channels to communicate with customers without going out in snow or rain. Some of these channels are email, webinar, social media, member portals, online newsletters and text or multimedia messaging through the smart phone.

The internet and cloud technology has enabled software engineers to introduce cloud based Enterprise Resource Planning (ERP) solutions. Thus, the managers can manage or monitor their organizational resources virtually anywhere in the world by using their personal computer, laptop, tablets or Smartphone. This concept has introduced the idea of globalization.

CONCLUSION

As stated earlier, the quickest way out of economic quagmire is information technology skill acquisition and application. Natural resources such as gold, copper, diamond, oil etc are no longer primary determinant of wealth, as intellectual capital and technology (especially IT) now rule the world. Examples have been given of countries which were once backward and poor, but are now classified as world economic power due to economic progress made by investing in Information Technology.

Nigeria cannot afford to be isolated from the global change brought about by IT. There is an urgent need for Nigeria to make genuine investment in IT in order to achieve the desired economic growth which is non-oil based. It is believed that when this is done, there will be tremendous growth in agriculture, industry and commerce and this will bring about sustainable development, economic recovery and diversification which Nigeria is yearning for.

RECOMMENDATION

In view of IT potentials discussed above, the researchers recommend that further research should be carried out in other profitable areas of IT application other than agriculture, industry and commerce so as to enable Nigeria achieve economic diversification and sustainable development.

REFERENCES

1. Odachi, G.N.; (2009). Introduction to Information and Communication Technology in Nwagiobi E.N. and Osegbo I. (1st ed.), Computer Applications and Operations, Onitsha, West and Solomon Publishing Coy. Ltd., Page 66.

2. Emeagwali, P. (2009). Around the Globe, Technology Widens Rich-Poor Gap: A Paper Presented at the African Diaspora Conference in Tucson, Arizona USA.

3. Mukesh, P., Deepati, T.P. and Kamini, B. (2010). ICT for Agriculture Technology Dissemination (http://agropedia.iitk.ac.in/?q=content/ict-agriculture- Technology di...) Accessed 23/11/2011.

4. Mason L. (2015). The Difference Between IT and ICT (https://www.techwalla.com/articles/the -difference between-it-ict)

5. Samuel, A.I. (2010). Using ICTS to Bridge the Agricultural Extension Gap and in providing Market Assess for Rural Farmers in Nigeria: A Practical Approach (www.google.com.ICT in Agriculture in Nigeria). (Accessed 24/3/2016).

6. Krishnamurthy, S. and Sundaresan, J. (1999). The Changing Role of Information Technology in Manufacturing, Journal of Computer Archive, Volume 32, Issue 3, Page 42 – 49.

7. Rana, P. (2013). Importance of Information Technology in Manufacturing Sector: A Review, International Journal of Emerging Technology and Advanced Engineering Vol. 3, Issue 9.

8. Butt, A.F. (2015). The Role of Information Technology in Business Success. (htt://www.linkedin.com/role-information-technology-business-success-abid-afzal-butt).