

Information Technology Innovation for Sustainable Development

(Protocols and greetings)

Introduction

It is somewhat of an innovation, I would say, for the Nigerian Computer Society to have invited a professor of languages to speak at the opening ceremony of its conference. This is the kind of out-of-the-box thinking which I appreciate and wish we would more actively promote in this country. I have come to be increasingly convinced that, on the long run, everything is connected. We are created as whole, integral beings, and our different component parts – body, soul and spirit – are intertwined and depend on each other for their most effective and most efficient functioning. Having said that, I therefore wish to express my sincere appreciation to both the National Executive Committee and the Conference Organizing Committee for the invitation extended to me to address this august body. I cannot but equally acknowledge my dear Big Uncle, Retired Archbishop Professor Adebayo Akinde, who facilitated it all. Thank you for the confidence you have always demonstrated in my ability to deliver. By the grace of God and your constant prayers for me, I trust that I will not let you down.

I just mentioned that I have recently been growing in the conviction that everything is connected. While delivering this year's public lecture organised by the Centre for Gender Studies of the University of Benin just a few weeks ago, I had cause to draw attention to the connection between the infamous remark made by our President while on a state visit to Germany in October last year that his wife "belongs to my kitchen, my living room and the other room" and the lack of development in our nation. Permit me to quote from that lecture:

"The fact – and this is crucial – is that it is not mere coincidence that it is precisely in those places where attitudes such as our President's prevail and, more importantly, among the leaders of such places, that we equally find the worst global indices in terms of social development: abject poverty among the majority of the population, a very low standard of education, early marriage of the girl child, high infant and maternal mortality rates, poor health services, lack of basic infrastructure, etc. That is, there is a high and significant correlation between a low perception of women and their role in society and a general, low standard of living for the overwhelming majority of the population. In other words, there is overwhelming evidence to support the assertion that countries where women, that is, half of the entire population, are relegated to the background or largely discountenanced are usually poor, underdeveloped or even undeveloped countries."

My intention in citing this example is to underscore the fact, right from the start and before moving into a more focused discussion, that riveting all our hopes on science and technology for sustainable development will not get us far. For decades now the leaders of our nation have been emphasising science and technology in our education sector, possibly in the hope that it would jump-start some kind of industrial revolution which would catapult us to the status of a developed country. The truth of the matter which we have failed to grasp, unfortunately, is that technology alone does not develop a country. Far more

important for the sustainable development of any nation is the pervading and prevailing moral environment which will have been created and in the context of which all other aspects of the citizen's lives can then function optimally. How can there be sustainable development in a nation with a National Assembly that is alleged to appropriate one-fifth of the annual budget to itself? How does a nation develop with the mind-boggling levels of corruption within its entire public service – from the army to the police and immigration services, to the ministries, departments and agencies of government? Will sustainable development not remain a mirage as long as we practice a moral code which does not hold public officers accountable and which grants immunity to those who have inflicted great suffering upon the citizens of this nation both by their actions and inactions? In my considered opinion, therefore, justice, fairness and equity for all, regardless of ethnicity, gender, age, social status or religion, are the true ingredients for sustainable development.

I thought that we should keep this point in mind as we proceed with this lecture, for they are the real evils troubling our nation and holding us down. Having done that, we can now proceed to discuss, of course from a linguist's understanding of the topic, how we could deploy information technology, or technology, quite simply, for sustainable development in our country and, I always like to add, on the African continent.

Standing on the threshold of a seismic shift

The realities staring us in the face as a country are alarming. While several other nations of the world seemed to have quickly grasped the fact, especially at the turn of the century, that momentous changes were underway which would significantly impact upon the manner in which human activity in the world has been organised and conducted so far, we in Nigeria appeared to have been incapable of factoring these impending changes into our collective psyche and, therefore, have continued in our state of blissful ignorance. Around 1990 the UNESCO set up what it called a Forum of Reflection whose task was to “reflect on the role of the UNESCO in the final decade of the 20th century and identify the new tendencies which could inspire the organisation in the coming decade.” Upon completion of its assignment, the Forum arrived at certain conclusions and made several recommendations, among which was the following: *“[T]hat it is primarily in education that a viable solution can be found to most of the problems which the human race is currently faced with... [and the UNESCO was therefore advised] to concentrate its energies in the coming years primarily on education and, in particular, the education of young people.”*

That, to my thinking, was probably the official declaration of the commencement of what has come to be known as the “knowledge industry”. The UNESCO recommended that nations, especially those in the developing world, should commit at least 20 per cent of their budget to the education of their children. Those in the developed world seem to have grasped the fundamental idea that knowledge is, indeed, power. In his book, *The Audacity of Hope*, (Three Rivers Press, 2006) former US president, Barack Obama, describes the American response to the threat of the Soviet Union's technological advancement at the height of the Cold War in these terms:

“In response, President Eisenhower doubled federal aid to education and provided an entire generation of scientists and engineers the training they needed to lead revolutionary advances. That same year, the Defence Advanced Research Agency was formed, providing billions of dollars to basic research that would eventually help create the Internet, bar codes and computer-aided design. And in 1961, President Kennedy would launch the Apollo Space Program, further inspiring young people to enter the new frontier of science.”

Further on, still in the same book, he states the following:

“If we want an innovation economy, one that generates more Googles each year, then we have to invest in our future innovators – by doubling federal funding of basic research over the next five years, training one hundred thousand more engineers and scientists over the next four years, or providing new research grants to the most outstanding early-career researchers in the country. The total price tag for maintaining our scientific and technological edge comes out approximately \$42 billion over five years – real money, to be sure, but just 15 percent of the most recent federal highway bill.”

In other words, we can afford to do what needs to be done. What’s missing is not money, but a national sense of urgency.”

Now, Nigeria is a member of the United Nations and a signatory to all the charters and protocols developed by that body; but what is our experience? How much money does our nation devote to education? It fluctuates yearly, somewhere between four and eight percent. The quotations cited above demonstrate a keen awareness, a clear understanding of the fact that it is education that leads to development; that the solution to most of the challenges facing any nation can be found in education, especially through appropriate research. A current urgent need, and one which is an ongoing activity in any nation that seeks sustainable development, is to determine where we stand and what challenges as well as opportunities are before us. So, where do we stand now as a nation?

A major challenge, obviously, is the death of oil. Oh sure, we are still managing to sell some and earn the bulk of our national revenue from it at the cost of about \$45 per barrel. We are fighting ourselves over sharing formula and threatening our corporate existence over a commodity whose utility, for all intents and purposes, is on a downward spiral. For example, some countries and cities are moving to ban the sale of petrol and diesel vehicles in the not-too-distant future; the car maker, Volvo, will phase out conventional engines by 2019 and have all its new vehicles be either fully battery-powered or hybrids. Environmental concerns are making nations turn increasingly to alternative sources of energy, with the leaders in solar energy being China, India and the United States. It is reported that Malaysia has succeeded in transforming its economy from being 70 percent oil-based merely eight years ago to less than 30 percent today.

There is much talk about the need to diversify our economy away from its overdependence on oil. Our Minister of Information has declared, at different times, that tourism and the creative industry are Nigeria’s “new oil”. How do we transform that declaration into reality? We are well aware that making speeches is not the problem for Nigerians; the difficulty with us is how to match our talk with concrete action.

Now, it is time to bring this discussion to a level that concerns this audience more specifically. While the death of oil has been seen to be imminent on the one hand, the coming to life of other “commodities” is equally being announced on the other – and they are smack in your domain: Big Data, the Internet of Things, Cloud Convergence, Robotics, Artificial Intelligence. These developments are leading to the loss of traditional jobs as we have known them, although Nigeria is still far behind in terms of this reality. But there is no doubt that it will catch up with us. We cannot continue to forever overpopulate our offices and institutions with workers doing jobs which can be easily done by machines. We still have an army of typists and messengers in our government establishments who are being paid monthly salaries for doing almost nothing; part of the reason they are still there is because of the powerful unions to which they belong and which are unwilling to hear any talk of workers being laid off. But things will change. Right now, many states – and even federal universities – are unable to pay salaries and are negotiating with workers to pay only a percentage every month. Ultimately, it will be recognised that there is a saner path to tread.

The question I would like to put before this august assembly is the following: What do we need to do to prepare our population, especially our young ones, for the impending change? More specifically, what will you do as computer scientists, since these new developments are in your domain of expertise? Just a few days ago here in Abuja, at a conference organised by the Savannah Centre for Diplomacy, Democracy and Development to discuss the matter of the growing calls for the restructuring of the country, Dr. Oby Ezekwesili made the following remark: “Human beings need to become human capital.” My point of view regarding human capital development, as I advanced it in a recent lecture given at the Ambrose Alli University, Ekpoma, is that it has to do with the kind of human beings that a society produces. And embedded in that phrase “kind of” is a very strong dose of morality.

However, I do not intend to dwell very much on the moral aspect in this particular lecture. I just ask you to recall the notion that was presented at the beginning, namely, that everything is connected. I am just wondering, can dishonest, corner-cutting, deceitful individuals build robots that would function optimally? I sincerely believe that all the discussions we should be engaged in now, as we tackle the serious problems confronting us as a nation, must be undergirded by a consideration of the values we hold as a people. Once that is made clear, we can now ask what ought to be done, in the light of these “seismic changes” looming large on the horizon.

New skills for human capital development

My idea in this section of the paper is to advance the viewpoint that we need new skills for living in the 21st century and for our sustainable development. These skills, most certainly, will need to be taught; so we return to the centrality of education. I believe that your association, being at the vanguard of the developments which are set to transform our lives – and indeed which have already significantly done so – should play a crucial role in transforming Nigeria into a knowledge-based society. I cannot talk to you about Big Data, the Internet of Things and Cloud Convergence; they are far beyond my level of competence

or expertise. But I can bring things down to my level and, I believe, it will be in a manner that would be useful for all of us.

It seems that formal education has failed us, not only in Nigeria but in Africa as a whole. In spite of years of Western education and our exposure to the scientific method which I understand as the search for the truth concerning the nature of the world in which we live through well identified processes of investigation of phenomena, yet this has not led to our finding solutions to the many ills that plague us or conquering our environment. Malaria continues to wreak havoc on our populations, especially our children; we are unable to provide for our teeming population the basic necessities like water and electricity. More importantly, we cannot decide which world we will live in – whether the scientific world of school or our “Africa Magic” world in which people enter into trees and witches exert evil power over people by remote control.

There are skills which our current system of education has failed to transmit to us, and I would just like to illustrate with a couple of examples. I consider our inability to begin any program on time as a result of our failure to acquire planning and organisational skills. These skills require that the amount of time needed for the execution of every single aspect of an event be accurately determined and therefore planned for. I once discussed with members of my church’s Bible study teachers group who regularly came late to our Sunday morning meeting along these lines: in order to be there by 8.30 a.m. there is the need to time every single activity – prayer time, bath taking, cooking, eating, dressing up, drive to the church – which would then help determine what time to wake up. But maybe the basic issue is the recognition of the importance of timeliness.

Another skill which we have failed to acquire, along with this general lack of organisational skill, is that of logical reasoning. Many of us fail to see how things connect and so fail to make adequate preparation for the different stages of an activity we wish to embark upon. Take the clearing of gutters, for instance. Has any of us ever seen a person clearing a gutter along a public street and having a receptacle nearby into which the debris from the gutter would be deposited and carried away? No; we clear our gutters onto the roadside. Then the rains come or the wind blows and all the garbage is back where it came from.

What could be done to teach us these skills in which we are desperately lacking? My thinking is that we need to completely overhaul the curriculum in our schools, right from the primary school. We are not teaching our children what they need to learn. I was shocked to hear an officer of the Federal Ministry of Education recently advocating the introduction of a subject on financial management at the primary school level! We multiply the subjects at the primary and secondary schools, and all we achieve is rote learning; our children have not learned to reason logically and scientifically, nor acquired problem-solving skills.

Overhauling the school curriculum, might not be in your power to achieve, unfortunately. But what about the development of Apps to teach these skills? As you know, it is in spite of our government and leaders that we Nigerians are managing to bring about some development in a few areas of endeavour like the entertainment industry and IT. So, for example, how about if some of you collaborated with researchers and experts in the

relevant fields in our universities to develop computer applications to teach problem solving and organisational skills? Skills of precision and accuracy of measurement are equally needed. Our normal way is to approximate and manage things, as demonstrated by most of our mechanics, vulcanisers, carpenters, bricklayers, tailors, etc. Would that way of conducting business be compatible with a technology-powered economy? Indeed, how could technology be brought in to assist these artisans? There are developments already, no doubt, but how many of these interventions are home grown initiatives?

I am passionate about the development of our so-called cottage industries and the small and medium-scale enterprises. To be honest with you, I do not believe that we can immediately be catapulted into the developed nations' world of robotics and so on, except if we simply import everything which they have already developed. The reality, however, is that we no longer have the foreign exchange to do that, even if we wanted to. Our immediate priority, I believe, is to deploy technology in an innovative manner to give a renewed lifeline to our economy – and that can most readily be achieved at the level of the small and medium scale enterprises and our cottage industries. Computer scientists should work with them and help to enhance their capacities in their various areas of endeavour.

If information technology has to do with the use of systems for storing, retrieving and sending of information, I see a great need for this in our public life as well. I would just like to mention here a few specific areas:

-Electronic voting: Of course, electronic voting devices are readily available; our problem is the refusal to use them. Apart from the obvious case of their use in the conduct of elections, I believe that the storage of information regarding the voting history of every single member of our National Assembly is an important part of the democratic process. There is reluctance on the part of the House and Senate members to use e-voting; we must insist on it and I believe it will come ultimately. Beyond the e-voting, however, is the storage of that information. We should be able to recall, for each of them, what their positions have been regarding different issues on which they have voted, from early girl-child marriage to advocating immunity for Assembly members. This is part of the rights that those who voted them into position must enjoy – to know how they are being represented. And to have the right to recall anyone of them who they feel has not been representing them well.

Productivity-measuring devices: Are we as productive a nation as we could be, especially in the public sector? Can we even measure objectively and dispassionately how productive each individual that works in an office is? A very first step to doing this might be to have a way of capturing how much each worker actually spends in the office. Could we not introduce some form of clock-in/clock-out device in every public office, and have the information stored centrally and accessible to those who would need it to assist in assessing workers' overall productivity, for example?

- Tracking of Financial Transactions: We are all aware of the tremendous impact that the introduction of BVN and TSA into the banking and public systems has engendered. Is it possible to further develop this kind of system and deploy it in other areas so as to sanitise our corrupt system?

Of course, you all are far more qualified than I am to identify the various areas in which innovative technology can be deployed for the development of our nation. What is key is that our teeming masses of impoverished, ill-served citizens are eagerly waiting for help, for empowerment. Nigerians are not lazy; that is something that can be boldly asserted. But the ineptitude, greed and visionless leadership which has been inflicted upon us for decades have made it impossible for the vast majority of us to actualise our potential and live dignified and productive lives.

Conclusion

Of course, this lecture could not be brought to a close without mentioning the ongoing political agitations in the land. The underlying causes, as far as one can see, lie in the fact that some segments of the society, whether rightly or wrongly, feel they have been excluded from benefiting from the common good; they believe that they have been given the short end of the stick, so to speak, and are unwilling to accept the status quo any longer. What is the way out?

We are back to where we started from. It is only as we labour hard to ensure that we build a just, fair and equitable society that we can have sustainable development. Otherwise, we may have some form of development – build a few roads and bridges, start some factories – but they will soon be destroyed by the anger of dispossessed citizens or rendered incapable of functioning by the corruption of those whose duty it is to ensure their proper management. It will therefore be a question, therefore, of one step forward, two steps backward. Our most urgent need, ultimately, is one of a moral renewal, especially in the leadership of the nation.

I wish your society very constructive and fruitful deliberations as you go on with this conference. Thank you very much for your kind attention.