

INFORMATION TECHNOLOGY AS A TOOL FOR REALIZING THE NIGERIAN VISION 2020

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ABSTRACT

Nigeria a land so blessed with Natural resources is still lacking in the area development. In this political era however, the political leaders are showing a strong will to develop the country. This desire for development is manifested in the vision 2020 document. The blueprint for the vision 2020 development has a vision statement that "By 2020 Nigeria will be one of the 20 largest economies in the world able to consolidate its leadership role in Africa and establish itself as a significant player in the global economic and political arena" The key parameters listed for the achievement of the vision are in the area of polity, macro – economic development, Infrastructure development, education, health, agriculture and manufacturing. To ensure the success of the vision 2020, the critical success factors enumerated are a clear definition of the vision, leadership commitment, shared ownership by all stakeholders, a holistic and coherent and integrated strategy, effective strategic plan and framework, involvement of people from all tier of government and availability of human, financial and Institutional resources required to develop the vision. Very central and critical to these factors is the role of Information Technology which is a major tool for social, economic and political growth. Information Technology infrastructure is important in carrying information about job, investment opportunities provision of goods, services and E-payment. It is important that Information Technology be integrated and utilized in all the different parameters identified. IT has provided tremendous opportunity for rapid economic growth and confers competitive advantage to those that have access to it. The major challenge towards achieving the strategic goals of vision 2020 has to do with the proper acquisition and massive deployment of Information Technology.

Keywords: Vision, Information Technology, Nigeria and Tool

INTRODUCTION

Nigeria has an area of 923,768 square kilometers, including about 13,000 square kilometers of water. As of mid-2008, Nigeria's population was estimated at 138 million, and the annual population growth rate was about 2.38 percent. The results of the 2006 census indicate a total population of 140 million.

Nigeria's primary natural resources consist of natural gas, petroleum, tin, iron ore, coal, limestone, niobium, lead, and zinc. Nigeria has proven oil reserves of 36.2 billion barrels, the tenth largest reserves in the world. Proven natural gas reserves are estimated at 182 trillion cubic feet, the seventh largest reserves in the world and the largest in Africa. Estimates for oil and natural gas reserves are as of January 2007. The country also has an abundance of arable land (Library of Congress, 2008). With all these resources Nigeria still lack behind in the area of development.

Since the new political era, the Country has been making a lot of progress and there is a strong will by the political leaders to ensure a rapid development of the Country, this strong will gave birth to the concept of Nigeria's Vision 2020. It has been noted that "...in recent years, Nigeria has been experiencing a growth turnaround and conditions seem right for launching onto a path of sustained and rapid growth, justifying its ranking amongst the N11 countries. These are the countries identified by Goldman Sachs to have the potential for attaining global competitiveness based on their economic and demographic settings and the foundation for reforms already laid."

The intention to pursue the vision 2020 which states that: "By 2020 Nigeria will be one of the 20 largest economies in the world able to consolidate its leadership role in Africa and establish itself as a

significant player in the global economic and political arena” is a very laudable one. (The Presidency, Nigeria Vision 2020, 2010).

The key parameters of the vision 2020 according to the vision 2020 document include:

Polity

By 2020 the country will be peaceful, harmonious and a stable democracy.

Macro-Economy

A sound, stable and globally competitive economy with a GDP of not less than \$900 billion and a per capita income of not less than \$4000 per annum.

Infrastructure

Adequate infrastructure services that support the full mobilization of all economic sectors.

Education

Modern and vibrant education system which provides for every Nigerian the opportunity and facility to achieve his maximum potential and provides the country with adequate and competent manpower.

Health

A health sector that supports and sustains a life expectancy of not less than 70 years and reduces to the barest minimum the burden of infectious diseases such as malaria, HIV/AIDS and other debilitating diseases.

Agriculture

A modern technologically enabled agricultural sector that fully exploits the vast agricultural resources of the country ensures national food security and contributes significantly to foreign exchange earnings.

Manufacturing

A vibrant and globally competitive manufacturing sector that contributes significantly to GDP with a manufacturing value added of not less than 40%.

CRITICAL SUCCESS FACTORS

Some of the critical success factors that have been identified and listed for the attainment of the vision 2020 include:

Clear Definition of the Vision

This is clear definition which spells out the goals to be achieved in all the sectors like economy, social and political life of the country;

Leadership Commitment

The Leadership of the country must champion and passionately drive the vision; they must also reiterate and articulate unequivocally the belief and commitment to the vision.

Shared Ownership

All stakeholders must be made to see to the vision as theirs. “It is therefore imperative that the process of articulating the overall goals and key strategies should be and be seen to be transparently inclusive through the involvement of the broadest representation of stakeholder groups and socio-political perspectives.”

Integrated Strategy

There must be a ‘holistic, coherent and integrated strategy which recognizes the interdependencies of the various facets of national life (economic, political, cultural etc)’.

Effective Strategic Plan and Framework

The Government has to put in place a clear logical frame and strategic plan for achieving the defined goals. These must also be outlined with the following components: Purpose/Key objectives; Outputs; indicators; Activities/Programmes; Key assumptions and Risks.

Inclusive Development

The following tiers of Government must be involved in the implementation of the vision, the Federal Executive Council; the National Economic Council; the National Assembly/Judiciary; the three Tiers of Government; the Public/Private Sector/NGOs; the traditional Institutions and the Military.

Resources: All the resources (human, financial and institutional) required in developing the vision must be fully mobilized.

Apart from these identified critical factors as enumerated in the vision 2020 blue print, there is need to accord priority attention to Information Technology which is a major tool for social, economic and political growth. Information Technology Infrastructure is important in carrying information about jobs, investment opportunities, provision of goods, services and E – payment. Mahdiya (2009) has observed that:

The wave of globalization phenomenon has taken a centre stage as a dominant feature in the international political economy. In fact, it has become a phenomenon that no country can escape. This, therefore, compels many countries to take strategic steps towards actualizing their economic growth and development. In this respect, Nigeria has the option of either positioning itself and maximize the benefits of this New World Economic Order or be left away as by-stander or marginal player in the international economic configuration. Taking this into cognizance, the globalization of the world economic system has, therefore, compel many developing countries such as Nigeria to initiate policy measures and establish institutional frameworks aimed at accelerating their growth and development in line with current global economic trend.

Information Technology is very central to the issue of globalization. Efforts must be made to put in place adequate IT Infrastructure that will support the full mobilization of all the economic sectors. Computers and Technology has led to the advancement in international information flow and ease of business transactions. Kwanashe (1999) in Mahdiya (2009) agreed with this when he stated that “IT has provided tremendous opportunities for rapid economic growth and conferring competitive advantage to those that have access to it”. With this in mind, it could be safely said that one of the major challenges towards achieving the “strategic goals” of vision 2020 has to do with proper acquisition and massive deployment of information and computer technology.

In order to achieve the goal of reaching the top 20 economies by the year 2020, IT must be fully integrated into each parameter listed on the vision 2020 blueprint, these include the following:

Governance

In this political dispensation in the life of the Nigerian Nation, there is a growing need for grass root governance; there is need for proper communication between the governed and the government at the local, state and Federal levels.

Electronic government (E-government) is a good solution to the problems of communication between the populace and the government. E-government is defined as the use of Information Technology (ICTs) to transform government by making it more accessible, effective and accountable. (Infodev. 2002).

The main goals of e-government as listed by United Nations Economic and social commission For Western Asia (2003) are:

- a. Increasing access to government information;
- b. Enabling the engagement and interaction of the public with government officials.
- c. Increasing the transparency of government’s operation to make it more accountable and reduce corruption; and

- d. Benefiting rural and understanding community thus providing the opportunity for their development.

The benefits to the rural communities are:

- a. Healthcare: by providing information to rural doctors and Nurse, informing the rural poor of the health services they can acquire, recoding new – born babies online, and responding to enquiries about issues and services.
- b. Pensions: Providing rural old people with information about schemes, allowing access to the pension account, enabling the users to view their employment profile and modify it if they wish.
- c. Information on economic activities in rural areas: such as the latest techniques in crop production, livestock production and other activities.

The steps to be taking in order to reach a full electronic government according to infodev initiative are in 3 phases, these include:

- a. Publishing government information such as rules, procedures, and general information, this saves all citizens time, effort, and cost.
- b. Increasing participation of the populace in government issues, this is done through forums and discussion groups.
- c. Making government services available through the Internet. These save cost, accountability by means of information logs, productivity improvement, elimination of long wait time, decreasing bribes and corruptions, and allowing the disabled and remote individuals easy access.

Some of the obstacles that may arise from to e-government are:

- a. Online security, especially when transactions are taking place.
- b. Community trust, people who are unfamiliar with IT may feel uneasy about using technology for government transactions.
- c. Access by remote individuals and disabled individuals may be a major challenge to the problem of connectivity.

Agriculture

Information Technology should be used to develop agricultural research, education and extension to improve quality of life in the Country. IT would help Nigerian farmers get relevant information regarding agro-inputs, crop production technologies, agro processing, market support, agro-finance and management of farm agri-business.

Chauhan(2010) has observed that “agricultural extension mechanism is becoming dependent on IT to provide appropriate and location specific technologies for the farmers to furnish timely and proficient advice to the farmers. IT can be a best mean not only to develop agricultural extension but also to expand agriculture research and education system.”

In order to have a “modern technologically enabled agricultural sector”, Nigeria must “develop agricultural education management through exposure of agricultural teachers and educational planners, class rooms, virtual class as well as dropout agricultural learners.” Chauhan (2010). In the area of agricultural extension management, IT should be used to encourage future resource documentation and as methods of extension and linkage between research and extension. In agricultural research management, IT should be used for textual and non textual documentations and in deciding prioritization of research areas to be reinforced. Information Technology can have serious impact on crop forecasting, input management, command area management, watershed management, land and water resources development, drinking water potential mapping precision management, natural disaster management, fishery management, hill area development and post harvest management. According to Chauhan, India with a population of over 1.03 billion achieved a marvelous success in food grain production from a bare 51 million tons in 1951-52 to 212 million tons in 2003 through the use of appropriate IT in agriculture.

Health

Information Technology has the potential to improve the quality of healthcare; this can be done through new ways for healthcare providers and their patients to readily access and use health information, information technology (IT) safety, and efficiency of health care. It has been noted that "...relatively few health care providers have fully adopted IT. Low diffusion is due partly to the complexity of IT investment, which goes beyond acquiring technology to changing work processes and cultures, and ensuring that Physicians, Nurses, and other staff use it." (MedPac, 2004).

In general, IT allows health care providers to collect, store, retrieve, and transfer information electronically.

IT is utilized a lot in electronic health records (EHRs, also known as electronic medical records, automated medical records, and computer-based patient records, among other names); multiple definitions exist, depending on the constellation of functions that are included (Brailer and Tarasawa 2003). They can also be used simply as a passive tool to store patient information or can include multiple decision support functions, such as individualized patient reminders and prescribing alerts.

The following technologies and terms are often included in discussions of Information

Technology in health care: They are adapted from deliverable submitted to MedPAC by Abt Associates.

Electronic health record (EHR)

EHRs were originally envisioned as an electronic file cabinet for patient data from various sources (eventually integrating text, voice, images, handwritten notes, etc.). Now they are generally viewed as part of an automated order-entry and patient-tracking system providing real-time access to patient data, as well as a continuous longitudinal record of their care.

Computerized provider order entry (CPOE)

CPOE in its basic form is typically a medication ordering and fulfillment system. More advanced CPOE will also include lab orders, radiology studies, procedures, discharges, transfers, and referrals.

Clinical decision support system (CDSS)

CDSS provides physicians and nurses with real-time diagnostic and treatment recommendations. The term covers a variety of technologies ranging from simple alerts and prescription drug interaction warnings to full clinical pathways and protocols. CDSS may be used as part of CPOE and EHR.

Picture archiving and communications system (PACS)

This technology captures and integrates diagnostic and radiological images from various devices (e.g., x-ray, MRI, computed tomography scan), stores them, and disseminates them to a medical record, a clinical data repository, or other points of care.

Bar coding

Bar coding in a health care environment is similar to bar-code scanning in other environments: An optical scanner is used to electronically capture information encoded on a product. Initially, it will be used for medication (for example, matching drugs to patients by using bar codes on both the medications and patients' arm bracelets), but other applications may be pursued, such as medical devices, lab, and radiology.

Radio frequency identification (RFID)

This technology tracks patients throughout the hospital, and links lab and medication tracking through a wireless communications system. It is neither mature nor widely available, but may be an alternative to bar coding.

Automated dispensing machines (ADMs)

This technology distributes medication doses.

Electronic materials management (EMM)

Health care organizations use EMM to track and manage inventory of medical supplies, pharmaceuticals, and other materials. This technology is similar to enterprise resource planning systems used outside of health care.

Interoperability

This concept refers to electronic communication among organizations so that the data in one IT system can be incorporated into another. Discussions of interoperability focus on development of standards for content and messaging, among other areas, and development of adequate security and privacy safeguards.

IT applications in healthcare falls into three categories:

- a. Administrative and financial systems that facilitate billing, accounting, and other administrative tasks;
- b. Clinical systems that facilitate or provide input into the care process; and
- c. Infrastructure that supports both the administrative and clinical applications.

There is need to carry out research to better understand what types of IT applications are most useful for improving care in different settings and what circumstances are necessary to ensure successful implementation of vision 2020.

Infrastructure

Infrastructure development is very important for sustained economic development and growth, inadequate and inefficient infrastructure can prevent the economy from realizing its full growth because of high cost of transactions. Adequate physical infrastructure such as transportation, power and communication through backward and forward linkages facilitates growth. Social infrastructure include water supply, sanitation, sewage disposal, education and health, (these are in the nature of primary services) and they have direct impact on the quality of life. Trivedi&Gada (2010) stated that "The visible signs of shortfalls in capacity and inefficiencies include increasingly congested roads, power failures, long-waiting lists for installation of telephones and shortages of drinking water illustrate the widening gap between demand and supply of infrastructure and also raises questions concerning the sustainability of economic growth in future." The government needs to put in place a policy and arrangement that will encourage the private sector to go into partnership with the public to developed Infrastructure; this is evidenced already in the success recorded in the telecommunication sector. To sustain the growth the government need to develop sound infrastructure so that the right input of skilled, qualified and socially contented labor; visible and reliable supply chains; prompt and accurate information for decision making; efficient process and updated technology can be given to the operations of manufacturing and services.

Economy, Industries and Manufacturing

Information technology has a great impact in all aspects of life and the global economy is currently undergoing fundamental transformation. Information technology has very real impact in Manufacturing, Industries and in all aspects of economy, while businesses and enterprises continue to undergo considerable changes. Usage of these technologies is revolutionizing the rules of business, resulting in structural transformation of enterprises. Berisha-Namani, (2009).

IT is very central to modern businesses and hardly can business operate without the use of IT, these apply to both Small and Medium Sized Enterprises. Most developing Countries are paying attention to SME, this is because it is recognized that it play a key role in the revitalization and development of national economy in many countries and particularly in Nigeria.

Berisha-Namani also noted that :

globalization of world economy and technological developments in the two decades of twentieth century have transformed the majority of wealth creating work from physically based to knowledge based and has greatly enhanced the values of information to business organisation by offering new business opportunities. While, for the last two hundred years, economics has recognised only two

factors of production: labour and capital, this is now changing. Information and knowledge are replacing capital and energy as the primary wealth creating assets. Information has become a critical resource, a priceless product and basic input to progress and development. Information has become synonyms with power. Therefore, accurate, rapid and relevant information are considered to be essential for SME.

A June 23, 2005 news release from the Office of Advocacy, U.S. Small Business Administration, indicated that home computer owners were slightly more likely to be business owners than non-computer owners. This report showed that Information technology has become a very important and inseparable ingredient in business today. Computers are used in businesses because of their efficiency, speed, low procurement cost and more than anything else, capability to handle multiple tasks with little chance for error. (Articlesbase, 2006)

The advent of the Internet has opened up a lot of opportunities for all types of businesses; it has also substantially contributed in bringing down the costs of communication and marketing. In a nutshell, technology has reduced the overall cost of business operations.

With Information Technology it is now possible to have many business functions operate on autopilot, this has opened up new opportunities for software development companies and business consultants.

Outsourcing is another business trend that is opening up as a result of deployment of Information Technology. Today it is possible for a company in America to have its data entry and customer service centers in overseas countries like India, this way, companies can service their customers 24/7.

Computer-aided manufacturing

CAMs defined as the use of computer software to control machine tools and related machinery in the manufacturing of work pieces. 'CAM may also refer to the use of a computer to assist in all operations of a manufacturing plant, including planning, management, transportation and storage.' It can also be defined as "a form of automation where computers communicate work instructions directly to the manufacturing machinery." Its primary purpose is to create a faster production process and components and tooling with more precise dimensions and material consistency, which in some cases, uses only the required amount of raw material (thus minimizing waste), while simultaneously reducing energy consumption.' (Wikipedia, 2009)

Today a single computer can control banks of robotic milling machines, lathes, welding machines, and other tools, moving the product from machine to machine as each step in the manufacturing process is completed. Such systems allow easy, fast reprogramming from the computer, permitting quick implementation of design changes. The most advanced systems, which are often integrated with computer-aided design systems, can also manage such tasks as parts ordering, scheduling, and tool replacement. (The Columbia Encyclopedia, 2008).

Education

Education is an important instrument for the development of the individual and the society at large; it is a weapon against poverty, illiteracy and disease. Education remains the heart of development; it is believed that the world as a global village can be a safer and happier if all are educated.

Therefore there is need to explore the options of online education or virtual education which will open up more opportunities to more qualified people to have access to higher education. The education sector is one of the major areas in which Information Technology is highly utilized; efforts must be made to integrate IT into all levels of education in Nigeria. This is the major way by which Vision 2020 can become a reality. A situation where more than half of qualified candidates can not get admission to higher education in Nigeria is totally unacceptable. It is high time for the Federal government to open up the education sector by allowing more online education.

Online or Virtual Classroom (VCR) provides a perfect environment for online training and gives a feel of being in the classroom itself. The solution can help provide effective training at low cost to employees of many. VCR integrates the best learning practices with the power of Internet to provide a dynamic learning platform to the learner. (Blue Apple Technologies, 2009).

E_learning (or sometimes electronic learning or eLearning) is defined as types of Technology Enhanced Learning (TEL), where technology is used to support the learning process. It is also a web based distance education, with no face-to-face interaction. The delivery of a learning, training or education program by electronic means. Stockley (2003) defined E_learning as involving the use of a computer or electronic device (e.g. a mobile phone) in some way to provide training, educational or learning material. Virtual classroom is also defined as a teaching and learning environment located within a computer mediated communication system Balogun and Ojokoh (2006). Compared to the conventional means of training, e_learning has the most important advantage of savings in terms of time and cost. The mantra is: "Getting the Right Information, to the Right User. At the Right Time" Other advantages include increase national as well as international student enrolments, improve their participation and enhance performance quotients. Basically, it allows you to add live, real_time interaction to distance learning. Blue Apple Technologies (2009) noted that other advantages among others are:

- a. Reduce travel time, infrastructure and communication costs
- b. Deliver online training in a format that replicates typical classroom interaction
- c. Record training sessions for later use to leverage value
- d. Empower employees to share knowledge with each other as subject experts
- e. Provide users with the access to the comprehensive knowledge repository.

This view was supported by Marie and Orgill (2009) who noted that the design and development of Virtual Instructor Lead Training (VILT) can provide the following benefits Flexible class times; Low cost; Interactive classroom like experience; Engaging participant materials and resources; Engaging graphical content; Effective after_class "homework"; and Unique small or large group learning The main Features of virtual classroom are identified as:

- a. Crystal_clear, full_duplex voice over the Internet.
- b. PowerPoint presentation broadcasting.
- c. Synchronous whiteboards.
- d. Many_to_many high_quality video conferencing even at lower bandwidths.
- e. Application and desktop sharing.

Unlike the brick and mortar school setting, virtual classroom consists of a group of communication and work 'spaces' and facilities that are constructed in software. Different terminologies have been used to describe E - Learning, these include online learning, virtual classroom. The principle of online pedagogical approach is built on self-paced synchronous and asynchronous learning. The system allow students to view and attend lectures at a time of their choice, however such courses must be completed according to set standard schedules.

The learning is built on computer and communication technology with the use of devices like personal computers, CD-ROMs, digital television, PDAs, and mobile phones. Communication technology makes it possible to use the Internet, email, discussion forums, collaborative software and team learning systems.

Conclusion: The vision 2020 is a great vision that can transform Nigeria and make her one of the 20 largest economies in the world if properly implemented. The Nigerian leaders must champion and passionately drive the vision, while other stakeholders must be involved in making the vision a reality. Efforts must be made to put in place adequate IT infrastructure that will support the full mobilization of the entire economic sector for this purpose.

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