Information Technology Sustainability in Nigeria

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ABSTRACT

Information technology has been the core tool for organization's operational efficiency. The rapid development in all sectors of our economic endeavours has encouraged the accommodation of technology providers. This can be testified by the presence of all sorts of information technology devices spread all over business premises to reduce human intervention in most of our business operations today. This paper addresses the issue of continuous sustainability of information technology in Nigeria. Information technology is identified with host of problems and solutions that are closely linked with sustainable development in low and middle income countries like Nigeria. IT offers possibilities for building infrastructures and creating opportunities.

Keywords: *Sustainable Development, Information Technology, Economic development, Social Development, Environment development.*

1. INTRODUCTION

The past hundred years has seen technology in its many forms have an unparalleled effect on our lives. It has been the principal contributor to increasing the real standard of living of people in industrialized countries of the world. The revolutionary potentials of information technology lie in their capacities to instantaneously connect vast networks of individuals and organizations across great geographic distances at very little cost. As such information technologies have been key enablers of globalization, facilitating World-wide flows of information, capital, ideas, people and products. They have transformed business, markets and organizations, revolutionized learning and knowledge sharing, empowered citizens and communities and created significant socio-economic growth in many countries. In recent years, developing countries in Africa (Nigeria as a case study) and international development community have started taking concrete actions to incorporate information technology into their economic policies and development agenda.

This requires the implementation of sustainable measures to improve access to the internet and telecommunications, infrastructure and increase information technology literacy, as well as development of local internet-based content. Nigeria like most developing countries still depends on content developed and managed in the developed World, and as a result, substantial costs are incurred while trying to access content.

Information technology has been identified with a host of problems and Solutions that are closely linked with aims for sustainable development in low and middle-income countries. It is an essential enabling feature of globalization, and local applications of technology offer possibilities for building infrastructures and creating opportunities. The impact of new technologies on society and development affects various interests and domains, and the effective and appropriate use of information technology requires consideration of social, cultural, economic, political, and environmental contexts and effects.

In general, information technology goals in Africa are; to establish an environment that encourages networking of services and applications, promoting internet access to exchange and access digital content, promoting e-education and online services, facilitating e-health, e-commerce and promoting programmes for goods and services, establishing e-government, strengthening network security, building and developing e-society and information technology human resources.

Sustainable Development is a global crusade movement, a process rather than an end goal. To achieve and sustain development (sustainable development), revolutionary efficient, reliable and potential tools must be employed. These tools are the Information and Technologies; such as the Internet, mobile phones, e-mails, micro-computers amongst others The opportunities and challenges applying the technologies to old problems require the guidance from a new breed of professionals and policymakers who can integrate technological expertise and a clear understanding of its wider ramifications as a guide to strategies for

applying technology to the tasks of achieving sustainable development.

1.1 Sustainable Development

Sustainable Development is a pattern of resource that aims to meet human needs while preserving the environment, so that these needs can be met not only in the present, but also for generations to come. Sustainable Development simply put is developing for the present future, the process of ensuring that the present development is sustained and maintained for the future.

The world commission on environment and development—the Brundtland Commission defines sustainable development in its 1987 report as follows:

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

The concept of 'needs' in particular the essential needs of the world's poor, to which overriding priority should be given; and, The idea of limitations imposed by the state of information technology and social organization, on the environment's ability to meet present and future needs.

Although the definition of sustainable development emerged from an international enquiry into the relationship between environment and development, it is not concerned primarily with the environment but with it's sustainable. The field of sustainable development can be conceptually broken into three constituent parts; environmental sustainability, economic sustainability and social sustainability. However, this study shall lay more emphasis on economic and social sustainability:

1.1.1   Economic development

Seeks to reduce and eradicate income poverty, achieving higher levels of prosperity and enabling continued gains in economic well-being;

1.1.2   Social development

Seeks to reduce and eradicate other dimensions of poverty, improving the quality of education, health, housing and other aspects of the welfare of individuals and communities, and enhancing the quality of social interaction, engagement and empowerment;

1.1.3   Environmental protection

Seeks to reduce pollution and other negative impacts on the environment, mitigating the effects of industrialization and human activity, and seeking to achieve sustainable use of resources in the interest of future generations.

2. SUSTAINABLE DEVELOPMENT AND INFORMATION TECHNOLOGY

Sustainable development as a goal and the dynamic growth of information technology share many characteristics as drivers for change within modern economies. Both require us to rethink and redefine the nature of goods and services and both have the capacity to transform the relationship between governments, companies, citizens and consumers. However, there have been surprisingly few attempts to assess whether the growing acceptance of the sustainable development agenda and the growth of Information technology will complement or conflict with one another.

2.1 Social Entrepreneurship for Rapid Sustainable Development

Social entrepreneurship uses entrepreneurial principles to organize, create, and manage a venture to solve social problems. Historically, conventional entrepreneurs measured performance in profit and return; social entrepreneurs assess their success in terms of the impact they have on society. Although all entrepreneurial activity ostensibly is for the elevation of society, there are differences in approach and opinion as to the profit motive for social enterprises. There are easy points to get hung up on, but for the purpose of this paper, we will leave the status broadly defined as an organization that operates under market constraints for its services thus, if people in a community do not desire a service, the organization would not exist.

Using this basic assumption, we observe that society needs many different support systems to function and grow effectively. These include: educational systems, healthcare, sanitation systems, economic opportunity, food security, and basic infrastructure including shelter and information technology. No one organization will be able to enter into a community and provide all of these services. So, social entrepreneurs are likely to target one sector where they see the most need and develop their business models appropriately

2.2 Learning and Sustainable Development

There are no clear road map to achieving sustainable development. There is, however, a considerable amount of consensus that the most successful approach will involve the collaboration between stakeholders and education. The UN believes that education can play a huge role in driving sustainable development and has declared this the "Decade of Education for Sustainable Development" (2005-2014) (UNESCO 2006). More people at all levels must be enabled to develop the values, attitudes, and skills

necessary to change behaviour in regard to natural resource management and economic development.

2.3 Information Technology Resources for Sustainable Development

According to Attama and Owolabi (2008) the following are primary Information technology resources,

Computers Hardware and Software: Computers have come to stay not just as mathematical tools but as essential management resources. Evidently, different operations can be handled more efficiently using Computers. With computers, such activities as information generation, processing, analyzing, storage and communication for sustainable development could be executed easily. The greatest assets of the computer are speed, cost-effectiveness and optimal utilization of available resources. All these fits are achieved through the use of the physical components called the hardware in conjunction with collection of sets of instruction called software..

Databases: A database is an approach to data management, that efficiently organizes data with a pool of related data shared by multiple application programs. A database stores stores information about multiple types of entities, the attributes of these entities, and the relationship among the entities. A collection of programs called database management system (DBMS) is used to store and transform the stored data into information that helps managers in their making process.

Telecommunication and Computer Network: Telecommunications refers to the electronic transmission of signals for communications, and it has the potential to create profound changes in business because it reduces the barriers of time and distance. A network is simply the most cost effective way to share a collection of communication equipment such as PC's, servers, printers and modems that have been connected together by cables. A network helps people work collectively, not just individually. Networking is all about sharing data, software and peripherals such as printers, modems, fax machines, Internet connections, CD-ROM, tape drives, hard disks and other data storage equipment. A small network can be as simple as two computers linked together. A large network can link hundreds or thousands of computers and peripherals together in various configurations.

As computer networks are connected with one another and information is transmitted more freely, a competitive marketplace is created and excellent quality and services are imperative for success.

The Internet: This has proven to be the most valuable vehicle for accelerated information flow.

The internet has become the world's most extensive public communication system, linking hundreds of thousands of individual networks all over the world and more than one billion worldwide. It is an interconnection of computers across the globe for the purpose of sharing information.

Information sharing creates awareness, ensures continuous use of products and services, provides feedback and support for organization. The contention here is that any organization or government that has current and useful information is empowered to enhance productivity and good governance.

Electronic Mail (E-mail): This is the most widely used resource of the Internet. It is provided for sending and receiving mails (messages) through electronic devices. Intra and inter organizational communication has been made faster and cheaper. E-mail has become the life-wire for many business and organizational communication.

World Wide Web (WWW): World Wide Web is also an Internet-based resource. It is a utility based on hypertexts (Hypertexts simply documents through keywords in document or page). A visit to a website helps individuals or organization to locate products, information, pursues political or social agenda and transacts business (Chiwetalu, 2003). From the above, we can infer that being on the web would put any nation or organization on the right course of speedy and sustainable development in line with the emerging changes in technology, economic and political paradigms. Consequently, many organizations, ministries and governmental parastatals have their own websites through which they make relevant information available to members of the public.

2.4 Information Technology in Sustainable Development

The importance of information technology to different sectors of national, economic and educational life of the nation cannot be over stressed. The specific benefits of Information technology to these sectors and how the use has been contributing to sustainable national development are discussed under this segment (2.5).

2.5 Information Technology for Good Governance

The potential attributes and benefits of information technology to policy makers in the society have been accepted as imperative paradigm (Attama and Owolabi, 2008). In all intents and purposes, Information technology is the acclaimed engine room of modern day global development and sustainable growth (United Nations Conference on Trade and Development, 2005).

The infusion of information technology into public administration enhances efficiency in the delivery of services to the people. IT helps in taking high quality decisions and at the same time saves time. It is in line with the laudable roles that the federal government of Nigeria in order to ensure the full exploitation of the potentials of

information technology in sustainable democracy laid foundation for e-government in Nigeria.

Countries that have adopted and applied electronic services information technology to their operations have witnessed dramatic improvement in their development efforts. For countries such as Singapore, United States, Canada, Japan and most European nations, information technology is a strong tool for sustainable development and improving governance, widening democratic space, increasing productivity, administrative effectiveness and cost savings . It is not surprising therefore that the application of information technology in governance is engendering many concerns in many countries of the world.

2.6   Information Technology Application in Education

Most of the discussions and initiatives on information technology in Education tend to focus on the use of information technology for teaching and learning only (The Commonwealth of Learning, 2006; Becta, 2004). This emphasis on instructional applications of information technology in education has an antecedent. From the earliest times, educational interest in technology has always centred on the instructional application of such technology to improve teaching and learning. The case of the computer provides a perfect illustration of this point. Long before the emergency of information technology, educational interest in the computer centred on its instructional applications as exemplified by computer-assisted instruction (CAI), computer-aided testing (CAT), etc.

It is perhaps easy to understand why the emphasis at the basic and secondary education levels should exclude research application of information technology. The primary responsibility of the teachers at these levels is defined exclusively in terms of teaching. However at the higher education level, teacher's primary responsibility is of a tripartite nature involving teaching, research and community service. In effect it can be suggested here that any approach to information technology adoption at the higher education level that stressed only instructional applications and ignores research applications, will be grossly inadequate in meeting the needs of both students and teachers. The indispensability of information technology in education research in particular includes:

Learning how to optimize the creativity of African Scientists through participation in international networks and working with data sets. Accessing various kinds of research information, which would necessitate a link to the libraries group learning new methods for disseminating knowledge produced in Africa and using them.

Information technology applications run through the entire educational research process. The advocacy for the indispensability of information technology in educational research can be further strengthened by the following arguments that tend to underscore the values derivable from applying information technology in educational research. It reduced time and cost of conducting educational investigation. Data sets and library resources can be shared by institutions in different locations.

2.7   Benefits of Information Technology in Legal System

Globalization driven by information technology is having a tremendous impact on acquisition of legal, and other relevant learning, teaching and research materials in law libraries across the country. Information technology is used in the delivery of legal services Legal informatics is in structuring, organizing and identifying the properties of legal information as well as it;s storage, retrieval and dessimination. Through information, lawyers and students can have access to current court proceedings/cases and law reports anywhere, any time and in any form in the country. There is no doubt that the integration of information technology into the practice of law is of much benefit to the profession in the 21st century. Information technology is a remarkable tool for providing comprehensive, current and timely legal services to the citizenry. The relevance of information adoption and utilization in legal system for effective and efficient service delivery is a contributory factor to sustainable development in Nigeria.

2.8   Information Technology in Business Management

Information Technology is an essential part of national infrastructure and factors greatly in both public and private sector business enterprises. It creates business opportunities, especially for companies located far from urban centres, and improves links among firms, suppliers and clients. When used well, information technology can also make management and operation more efficient. In another development, Sangowusi cited by Attama and Owolabi (2008) maintains that information technology is very useful in corporate environment because it promotes performance and improves efficiency.

3. SUMMARY AND CONCLUSION

Information technology plays an essential role in the achievement of global sustainable development. Until recently, most attention was focused on the generation of large, relatively autonomous data sets and on the development of a basic technical infrastructure. Yet, many of the current information tools are still quite primitive in the functionality they provide, and there also remains much room for improvement of data quality and

accessibility. Fortunately, information science is accepting the challenge, and is working hard to address these problems. Information tools developed mainly for individual usage, such as data- and knowledge bases, expert systems, and geographical information systems will steadily mature and become more accessible to the mainstream user. However, to better support collaborative problem solving, which is a key process in sustainable development, more effective technological support is needed. One conceptual model and partial solution for meeting this important challenge is provided by distributed artificial intelligence. It will provide some of the much needed integration, foster cooperation between individual tools, and take over some and take over some of the coordination chores which now are still carried out by human beings.

According to Nkereuwem (1996), the importance of information technology for sustainable development, has long been recognized by developing countries technologies. Information has impacted on different sectors of the Nigerian economy. The application of information technology has emerged as the most radical development of the 21st century. It has facilitated speedy information transmission, high level decision making, reduces cost in resources/organizational management and as well opens vast opportunities for information sharing among individuals, companies and governmental institutions. It is a truism that information technology is very indispensable to Nigerian sustainable development drive. Today information technology has been successfully integrated in the process of state administration, leading to a view concept of e-government. The potential benefit of information technology to sustainable development in Nigeria has been accepted as an imperative paradigm.

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