Utilizing Information & Communication Technologies for Information Preservation

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ABSTRACT

The paper examines information from the perspective of a conceptual framework with a view, primarily, to establishing its primacy and universality in a technologically propelled world of today. Owing to the exponential growth in the generation, availability and accessibility of information in recent time, the paper establishes the significance of the application of relevant technology in information acquisition, processing, storing, retrieving and disseminating the hallmark of libraries. Impediments to a full realization of opportunities offered by information technology such as infrastructure dilapidation, owing to perennial shortage of funds, adequate personnel, maintenance culture, etc. were pinpointed. It concludes on a recommendatory note by suggesting the rehabilitation of infrastructure facilities, improved budgetary allocation to, and monitoring of, the information sub-sector, recruitment of sound and skilled personnel, including on-the-job training and retraining as well as proper and adequate maintenance orientation.

Keywords: Utilization, Information, Communication Technologies and Information Preservation

INTRODUCTION

Information is a term that has been defined by several authors differently. Some took its definition in their writings for granted, did so probably because they felt the term is too common and indeed too familiar to warrant such a need. This is however contrary to the position of many authors who have found that defining the term information is not after all, as simple and straight forward as some have thought. Aguolu (1989) emphasizes on this "semantic and conceptual difficulties", as there are many approaches/dimensions to defining the term information. Not only can it be referring to "information systems or to objective and cognitive documentary information", it also has "time and other situation dimensions" since its value was contingent upon its timely availability. Thus, Burch and Grundnitiski (1989) view information as "data that have been put into meaningful and useful context and communicated to a recipient who uses it to make decision".

In a similar effort, Aguolu (1989) puts forward an understanding of information from two perspectives namely: the viewpoint of its contents-intellectual essence and that of its processing and transfer. That is, the means by which it is produced, published, organized, stored, retrieved and communicated. Thus the signal, stimulus, or whatever message of human experience that is communicated purposely to elicit a response due to its response potential can be referred to as information. In other words, the term information has come to be regarded as the communication of knowledge. Daniel (1989) uses a broader approach in her definition of information when she views it as "knowledge used in its generic sense irrespective of the source, format, mode or transfer medium". The New Webster's Dictionary of the English Language (1992) refers to it simply as knowledge obtained by search, study, etc.

In his rather simplistic attempt at coming up with a definition, Pinniston (1980) categorizes information as ranging "from articles in technical publications to verbal reports of informal meetings and from news items in daily or trade newspapers to patent specifications". Also information can be regarded as a definite knwoledge acquired. It is the collected fact and data about a specific subject.

THE PREEMINENCE OF INFORMATION

It has been known that, the present world order is one strictly ruled by the power of information and not that of money. Unlike several decades ago, the world today has come to a full realization of the fact that information "is the prime commodity of the presence age " (Issa, 2002). This is especially so for the advanced countries of the world where this has been long established as a reality. As for majority of the developing countries, that are yet to reach such an advanced stage of the realization of its significance, they are fast coming to terms with the inescapable reality of this. This is for the simple fact that there seems to be direct link between a nation's material prosperity and that of her information-wealth; and vice versa. The reason for this assertion cannot be far-fetched as the availability and free flow of information represents a basic requirement for the emergence of a crop of well-informed and participatory citizenry. This is because, a combination of experience and new knowledge brings about information; a commodity quite vital to the healthy development of both individual and society in general. This is to the extent that development rests upon the dissemination and application of different types of information (Issa, 1998)

In his own view, Muhammed (1994) was explicit in asserting that information is the vital resource which provides impetus for a nation's social, cultural, spiritual, political, economic, scientific and technological advancement; great socio-political equality; and effective and efficient governance, power and followership". There is no doubt, therefore, that information "has always played a central role in human life, hence a basic human need, which has an over-riding and all-permeating significance to all and sundry" (Issa, 2002), indeed, many believed , as Ojiambo (1992) that an awareness and appreciation of the importance of information for socio-economic development and decision making could lead to formulation of policies for the development of the information infrastructure and the education of the human resources needed to manage information services. He further confirmed that the one key resource sought by every human being is information. Whether for problem solving, decision-making or both, information is sought by everyone-young and old, educated or illiterate-regardless of their occupation and where they live. It is important to know that information acquisition is not only critical for individual job performance, but also important as a means of influencing decision making positively for the good of all. Instances to illustrate this abound.

Managers, for example, who are in possession of information critical for decision making, have a greater capacity to influence management decisions than those who do not possess information. Similarly nations, which possess the capacity to gather and process information or have a monopoly of information, can influence socio-economic and political decisions effectively over others that are information poor. Thus, often times, information access has become ready tool used as an economic weapon against hostile nations by an information superior one; simply by disallowing the former all forms of access to information databases under its control. This explains why there is now a greater awareness and appreciation of the power of information as a key resource for development in developing countries today than there was in the 1980s.

It is no longer news that the world has moved from the industrial age into the information age; such that the world now confidently boasts of an economy primarily based on information. This is typified by what has come to be referred to as the
"information explosion" that "between 6,000 and 7,000 new scientific articles are now written each day". It was reported that John Naisbitt, in his 1982 bestseller Megatrends, predicted that the total amount of scientific information available in the world will double every twenty months. By this prediction, it means that we expect an addition of an amount of scientific information equal to all that mankind has stored since the beginning of time at every one and half year or so. But the trend is not limited to scientific information alone, as "massive collections of information, known as data banks also store facts about business, bank deposits, movies' reviews, criminal, legal precedents, economic statistics, and engineering data".

Not only are these data banks growing as fast as the scientific information, new data banks which contained collections of information never before accumulated are also being developed rapidly (Brightman and Jeffrey, 1986).

UNDERSTANDING INFORMATION TECHNOLOGY

The word "technology" refers to that branch of knowledge, which deals with scientific and industrial methods and their practical use in industry. This explains why some refer to it simply as "practical science". It is in this sense that Langley and Shain, as quoted by Chiesenga (1995) define information technology as "the acquisition, processing, storage, and dissemination of vocal, pictorial, textual and numerical information by a micro-electronic-based combination of computing and telecommunication". Whereas the computer provides facilities for processing, storage and retrieval, telecommunications, on the other hand, make available such facilities as are needed for the transfer or communication of data and information.

Information technology can simply be defined as the information revolution, a combination of massive increase in the world's inventory of information and the technical development of the means to cope with it. The *agradelibary* (2003) defines it as "all the hardware, software, telecommunications, database management, and other information that we use to process technology using computer based information systems".Information technology is the use of technologies from computing, electronic and telecommunication to process and distribute information in digital and other forms. Asifat (2012) said, Information technology is usually a more gegnral term that stress the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computer, middleware as well as necessary software, storage and audio visual systems, which enable users to create, store, transmit and mainpulate information. It can then be summarised as the processing of data via computer.

To appreciate how prudently information technology has affected us as individuals and as a nation, there is the need to first understand that societies we live in are complex structures of people and institutions interacting in multiple ways. We needed also to know that the social and technological revolutions affecting these structures positively and negatively-are equally complex in nature. This accounts for why the information revolution, which moved us from the industrial era to the information era, can also not make an exception. Indeed, information technology is a rapidly growing part of today's society; affecting every one's life in many ways. No doubt then that every human endeavour is influenced by information technology and the increasing rate at which it can perform.

Meanwhile, the information revolution is itself an outcome of several developments in electronics and the information needs of our social institutions, from business and industry to medicine and law. Brightman and Jeffrey (1986) summarized this trend succinctly in the following remarks that:-

- *The wheel. The printing press. The steam engine and the power loom.*
- *The telegraph, telephone, and light bulb. The automobile, airplane.*
- *And assembly line. Radio, television, nuclear power, and the transistor.*
- *Such technical innovations have profoundly influenced the way we live today. Each advance has spawned a technical revolution and each*
- *Revolution in turn has reached beyond the confines of technology toaffect the ways we live, work, and see the world.*

The fact still stands that the exponential growth of information, which brought about the so-called "explosion" was not solely a by-product of the development of the information technology. As a matter of fact, professionals from different fields of human endeavors would naturally continue to undertake research and turn out their findings. The same for judges and magistrates in courts who would continue to hand down their decisions; just as stock-market transaction would have to be recorded. No doubts also that world events would invariably inspire news stories. All these are to process and transmit the information generated by these activities. It is for the above reason also that one can conclude that the information explosion too, did not make a revolution on its own accounts. Rather, it has depended heavily on another, related revolution, which is the development of the technical tools to make information accessible to those who would use it. This has been referred to as the "high-tech revolution". The advent of high technology brought with it the design and use of electronic devices like the transistor and the silicon chip in computers and communications. The root of information technology can thus be traced back to 1828, when Charles Babbage produced the first programmable calculating device, known as the Analytical Engine. Then came the Howard Aiken's Mark 1 in 1944, which took the credit of being the first programmable computer.

Two years later in 1956, John Mauchly and Presper Ecker; both of the University of Pennsylvania, were credited for the development of the first electronic computer. The ENIAC as it was called was a slow, gigantic, but groundbreaking invention. Similarly, there were dozens of other major developments in computers and electronics communication (i.e. telecommunications) leading up to internet are of remarkable significance. Thus, the relationship between information and technology became logically pparent and symbiotic. The fact remains that for as long as there were no need for information, the need for automated method to produce, process, store and disseminate it would have not arisen. The inspiration, attempts and efforts which have culminated in the development of information and data processing techniques (i.e. technology), which we now use were borne out of sheer necessity.

The necessity was that of the need to produce the required information in the most economical, quick and reliable means possible. To illustrate this from the point of view of the business enterprises, apparent needs for information derive from both external and internal demands. Information on such things as billing, collecting, selling, delivering, producing, stock-keeping, disbursing, receiving and buying constitute the internally-derived information needs of a typical business firm. On the other hand, externally derived ones may come from related industries, customers, stockholders, unions, government, insurance, banks, vendors, competitors and world events. All the range of information listed above would be needed, one way or the other, to facilitate a number of business activities; operational and managerial (Brightman and Jeffrey, 1986).

Despite the unabated efforts to come up with better, faster and dependable ways to produce information, the needs for more of it still outpaces us. Consequently, the necessity for efficient data communication and the convergence of telecommunications, computer technology and software engineering have facilitated the development of network specially designed for packet switched data communication. This led to a major development that produced Integrated Services Digital Network (ISDN). This network is spectacular in that it carries digital information, which combines both voice and data in the same channels thereby forming the basis for a wide range of communications option and services (Ehikhamenor, 1993).

THE SIGNIFICANT IMPACT OF INFORMAITON TECHNOLOGY ON THE SOCIETY

Incontrovertible remains the fact that the great impact of information technology are being felt by all-individually and collectively-regardless of ethno-racial, socioeconomic and geo-political variations among peoples of the world. In the home, education and training, health, defense and security, finance and commerce the industry and in the office, the impact of information technology is inescapably manifest (Chisenga, 1995). Majority of Nigerians today are engaged in information related jobs, while the rest are in industries that rely heavily on information. In an era of global markets and global competition, the technologies to create, manipulate, manage and use information are of strategic importance. These technologies will help business remain competitive and create challenging, high-paying jobs (Oketunji, 2001).

The advent of technology has come to change the way information is gathered, processed and communicated to the end user. Indeed, the rise of information technology has been described as the single most important technological development of the 20th century. It has revolutionized almost every aspect of modern life in as diverse areas as stockholding, banking, publishing and personal communication (Agradelibrary, 2003). Particularly in the developed nations, electronic data exchange has now become a standard of method in information management. Information technology now has direct impact on human behavior as well as on human resource development in organizations.

Manager of business firms and other organizations, for example, need information in order to make operational decisions independent of headquarters staff experts. To achieve this efficiently and effectively, there must exist the means and tools for making it readily available and accessible.

Information technology thus provides for this need with the advent of, for example, the desktop computer, capable of retrieving needed information from many diverse sources. In that lies the prospect of a huge increase in productivity of decision makers. In fact, information technology has been considered as a basis for building an information management system strategy. Once a strategic information management system has been implemented, it creates an impact on the economy of an organization and of course, that of a country (Ojiambo, 1992). Consequently, many have better information management through the use of information technology.

In summary, the impact of information technology on business organization, and hence on the society, are provided as follows:-

1. With information technology, individual mangers can now make decisions by combining information developed within their companies with outside database, including economic and industrial statistics. This allows them to assemble studies of market competition, pricing and forecasts in hours rather than months.
2. Electronic mail, a major constituent of information technology, allows reports, memos, and other correspondence to be transmitted simultaneously to many people within the company as well as outside of it.
3. By the use of information technology, new systems can turn reams of numbers into charts and colorful graphs. Information can thus be more quickly digested for faster action.
4. Voice store-and-forward telephone system enable users send phone messages digitally by computer to any number of recipients within the company.
5. Computerized scheduling systems make it possible to set dates for large meetings without consulting executives individually.
6. Teleconferencing cuts travel time and expense by enabling managers in distant spots to talk “face-to-face” over television link ups (Business Week in Brightman and Jeffrey, 1986).

INFORMATION TECHNOLOGY APPLICATIONS TO INFORMATION PRESERVATION

As information is a vital ingredient in the development of a nation, the importance of information preservation is justified. The library serves as a means of preserving information accumulated over time and it is not a far-fetched fact that the improvement of the library will be of an immense importance to the society. The application of information technology to modern educational practices and librarianship practice has resulted in the overall improvement in the performance of libraries and other related information institutions. There is no doubt that the future of information preservation and librarianship practice in our society is closely linked with the development of information technology. This is for the fact that many of their activities and services are amenable to information technology application in libraries.

Areas of such applications in libraries include automated technical services to provide efficient reference and information services as well as network operations like cataloguing, authority control, interlibrary loan, and international bibliographic project (Oketunji, 2001). Thus, there is a direct link between the increasing advances in information processing technologies and modern librarianship practice. These advances in information technology allow for extensive possibilities for the communication of Scientific and Technology Information (STI). Indeed, their impact on information processing, storage and dissemination, and consequently on the output of the scientific and technology enterprise has been growing rapidly since the early 1970s in the industrialized countries (Ehikhamenor, 1993).

Libraries, as the traditional information institution, have had their fair share of the impact of information technology. Its impact on libraries has been on activities concerned with information storage and retrieval, and other such in-house keeping routines as acquisition, cataloguing, serials control. Implication of these is that libraries now provide their users with much better and more efficient information services through the use of information technology. This is because from remote database through the use of online services, computer terminals and telecommunication networks have provided desired links between different kinds of libraries and other remote computer databases where vital information could be located.

Also having positive effects on information management-and component of modern librarianship practice-is the optical disk technology which is another development in information technology . The optical disk has paved the way for new ways of information acquisition, recording, processing, storing and distributing; particularly by means of the CD-ROM (Computer Disk Read Only Memory). The use of this technology in libraries saves library money, space and other logistics associated with the purchase, processing administering and the use of hard copy (Chisenga, 1995). Oketunji (2001) identifies six (6) major areas of application of information technology to librarianship practice in Nigeria as including the following:

1. CD-ROM services
2. Library Networks
3. Personal computer application to library tutations
4. Electronic- Mail
5. Electronic- copying
6. Internet Connectivity

Cochrane (1992) outline eight (8) merits of the application of information technology to librarianship practice. These are as follows:

a. It helps to increase the range of services of its services offered.
b. It allows easy integration of various activities
c. It facilities cooperation and the formation of library networks
d. It helps to avoid duplication of efforts within a library and between libraries in a network.
e. It eliminates some uninteresting and repetitive work.
g. It provides marketing opportunity of its services.
h. It ultimately may save and generate money
i. It increases efficiency.

IMPEDIMENTS TO OPTIMAL UTILIZATION OF INFORMATION TECHNOLOGY IN NIGERIA

Like many other developing countries of the world, Nigeria is impeded in her drive to utilize information technology optimally for national development. There is no doubt that Nigeria continues to lag behind in her utilization of information technologies due to such factors as poor economy and poor communication systems, among others. Given the fact that the world now operates a global economy in a rather turbulent and volatile environment, the country has been unable to participate in both national and international information transfer.

Ojiambo (1992) attributed this condition to "the low level, or non-existence of industrial and information technology development in developing countries" as major obstacles to such participation. The country's capacity in information technology is far less developed than that in the advanced countries. Low investment by multi nationals; long period of political instability; coupled with lack of awareness and appreciation of the significance of information as a key resource for development by many policy makers; are others.

It is against the above that four (4) main impediments to optimal utilization of information technology in Nigeria can be identified namely:-

1. Infrastructure dilapidation
2. Perennial shortage of funds
3. Inadequate personnel
4. Poor maintenance culture

CONCLUSION AND RECOMMENDATIONS

The globalization trend in the present world is an irreversible one. It is either one joins or moves along with the rest of the world so as to benefit immensely there-from. Otherwise, one is avoidably left out and behind with all the attending losses. Due to its strategic position in the African continent, Nigeria cannot afford to be left out in this race. Not only do the rest of Africa look up to Nigeria for a well-deserved leading role in this regard, the entire world also expects the same. If Nigeria must grow and develop, therefore, the information technology race becomes a must-run for her. It is to this end that the following recommendations would go a long way to improve the present information technology situation in the country to a considerable extent.

These are:

1. Rehabilitation of infrastructure.
2. Improved budgetary allocation to, and proper monitoring of the information sub-sector.
3. Recruitment of sound and skilled personnel.
4. On-the-job-training and retraining of personnel

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