INFORMATION EXPLOSION AND THE CHALLENGES OF INFORMATION AND COMMUNICATION TECHNOLOGY UTILIZATION IN NIGERIAN LIBRARIES AND INFORMATION CENTRES

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Abstract: The discovery of paper, ink and the printing machine signaled the emergence of Information Explosion. Initially, the discoveries meant multiplication of information materials thus ending the era of keeping of information materials under lock and key. As a dynamic organism, the library has also benefitted immensely in the development of various media after the Second World War, when pictures, audio and video tapes became the means of preserving and transmitting information. The emergence of Information Communication Technology led to exponential availability of information, which in spite of its advantages also brought its challenges to users and information managers thus giving birth to information science. The difference between traditional libraries and information centres were highlighted and the paper revealed that in Nigeria, ICT is yet to take root among public libraries when compared with their academic counterparts as evidenced in studies on ICT and academic institutions. It identified challenges faced by libraries in Nigeria vis-a-vis utilization of ICT and recommended the need for library schools to review their curricular, improved funding and it also called on Government to put in place a robust ICT Policy so that both the urban and rural dwellers can benefit in the globalization process.

Keywords: information explosion, information overload, libraries and information centres, ict utilization challenges

INTRODUCTION

The library as a repository of knowledge has undergone tremendous transformation from the era of ancient library to the present information age. It is perhaps the only industry that has been affected continuously by technological changes but yet continues to adapt for the benefit of humanity. From the era of scrolls to discovery of paper, printing, microforms, audio-visuals to the discovery of the computer married to communication technology of the present age, the library has undergone tremendous transformation in processes and service delivery. While the discovery of papyrus and the printing technology meant availability of multiple copies for the library, microforms, pictures, films and transparencies had contributed to space-saving. Information and Communication technology (ICT) combines all the advantages derivable from earlier developments. ICT, which has been defined as “the set of activities which facilitate by electronic means, the processing, transmission and display of information” Wilson (2002) agreed that combining the computer with other information technologies such as telephone (stand alone and
mobile), the internet, televisions and radio makes information to be available “just in case” and “just in time”. With ICT, information could be created, distributed and accessed at will. It is the ease with which information gets created and distributed that brought about Information Explosion (IE), which has now assumed a disturbing phenomenon. What then is Information Explosion? This paper will therefore proceed to discuss the following: define Information Explosion vis-a-vis its related terms or synonyms, feature of Information Explosion; its advantages and implications, the place of library and information centres in the Information Management, Implications of Information Explosion, Library and Information Centres, Nigerian Libraries and ICT and make recommendations if necessary.

**Information Explosion**

Information Explosion could simply be defined as the rapid increase in the amount of published information. It is a situation in which information is abundantly available or over abundance of data. Information Explosion has been further explained as a situation in which users and managers of information are overwhelmed with available information Wilson (2001) calls this information overload and went on to identify two types of overload namely Personal Overload and Organisational Overload.

Personal Overload which appears cognitive is defined as “A perception by a person (observer) that the information associated with tasks is greater than can be managed effectively” and that such overload can create a degree of stress for which effective coping strategies are necessary. Organisational overload on the other hand is “A situation in which the extent perceived individual information overload is sufficiently widespread within an organization as to reduce the overall effectiveness of management operations” (Wilson 2002). Etsua-Mensah (1999) explains that there is information overload because more and more information is published every year and this creates problem for both users and managers of information. According to Wilson, the scenario of abundant or over abundance of information could be traced to the 17th and 19th century when information became an important input to any human activity. In view of the need to send information compactly the American Military during the Second World War resorted to use of pictures through which a lot of information could be sent at a time with short notes than long prose. It was this approach that introduced visuals into the information packaging system and when audio was also introduced the information system professionals were referred to as audio-visual librarian, media librarian etc. Exponential availability of information in form of books, journal papers, patent books, grey literature gained prominence in view of improved publishing facilities.

Furthermore, the release of German Secrets by America after the Second World War led to the emergence of information science in terms of coding and preservation. According to Wilson (2002), Price, another contributor to the issue of information explosion posits that there is exponential growth of scientific journals and/or abstracting which constitute a good deal of information available to scientific researchers. The introduction of abstracts is to enable researchers have precise and quick knowledge of contents of articles rather than spending time to read a whole content.

Hjorland (2006) while recognizing the fact that there is a lot of information explosion concluded that what is happening is actually publication or paper explosion characterized by more pages of professional journals and books, which are expanding exponentially. This, according to Hjorland could be attributed to publish or perish condition among academics and researchers as the underlying cause of so called “Information Explosion”. It was further believed that professional and research papers become obsolete fast such that in ten years not as many published papers could be useful or relevant especially in the sciences. The above has been the position of Kaplan (1979), which other writers has relied upon to query the term ‘Information Explosion’.

McIroy (2009) while discussing the impact of information on the future publishing in a reference to Bowker, a US based publishing company viewed that in 2004, three hundred and seventy-five (375) new titles and editions of books were released in English. In 2008, five hundred and sixty thousand, six hundred and twenty-six (560,626) titles were published in the United States of America alone. Bowker in its Books in Print (BIP) recorded five
million (5 million) books, audio books and video titles. This according to McIroy (2009) translates to over 1000 books per day for an average reader.

Historically, the growth of published materials had undergone an interesting trend as follows:

- In 1450 – 100 book titles published per year translating into 0.2 titles per million inhabitants
- By 1950 – 250,000 book titles were published per year or 100 per million inhabitants
- By Year 2000 – 1 million book titles published per year or 167 titles per million inhabitants.

Bibliographically, this means that:

By 1550 – 35,000 book titles were published

By 1850 – 3.3 million book titles were published

By 2000 – 52 million book titles were published

This implies that books are being published at such a rapid rate that they make users more exponentially ignorant. Based on the above, if a person reads a book a day he/she would be neglecting four thousand (4000) other titles published the same day McIroy (2009) concludes.

In view of the above, it might not be out of place to say that Information Explosion preceded Information and Communication Technology especially the internet and the web. The contribution of Information and Communication Technology to global availability of information will now be examined.

**Information Explosion and Information Technology**

One characteristic of information and Communication technology as represented by the internet is that individuals and organizations can publish information on the web without necessarily following the rigours of book publishing editorship, censorship and then marketing. For example, an individual can create a blog of his or her own. Often the blog is not restricted to personal information, personal opinion or professional publications could be uploaded to one’s blog. Furthermore, visitors to the internet are also at liberty to contribute to postings on the blog. Thus, the posting and contributions become information to others in a way. Some of the popular platforms for free publishing or expression of opinion include Wikis and some social networks site like facebook, twitter, linkedln among others. It is because opinions expressed in such platforms are not edited that makes academic researchers to be wary of them.

According to McIroy (2009), Internet Movie database list one million, four hundred and seventy-two thousand and fourteen (1,472,014) film/productions and three million, one hundred and twenty-eight thousand, two hundred and sixty-two (3,128,262) names of people who worked on the productions listed. Technocrati, an internet search engine for blogs reported that it indexed one hundred and thirty-three million (133,000,000) blog entry since 2002. According to Technorati there were seventy million Servers in August, 2005, which increased to one hundred and thirty-five million by September, 2007. Blogs on the other hand doubles every six months. In 2008 New York Times reported that an average worker in the United States of America visits 40 websites per day. Experience has also shown that no matter the search engine used especially the general ones like Google or Yahoo.com, results are usually duplicated or multiplicatated. The question can then be asked do we really have information explosion or information over-load? May be what we have is Information Multiplication.
Implication of Information Explosion

The obvious implication of information explosion is that there is too much of information flying around be it in the economic sector, science and technology sector, industrial sector or education sector. For relaxation and socialization information abounds in the various media either in published book or on the web. There is therefore the challenge of confronting the menace of Information Explosion. There are two approaches to this namely:

(i) Improving methodology of seeking data and information and transforming them to knowledge and wisdom and
(ii) Mechanised way of filtering data collected so as to separate data that only distract.

The two approaches listed above make the place of information managers namely Librarians, Indexers, Archivist and Curators imperative. Before discussing the place of knowledge managers, it might be necessary to list some fallouts of information explosion. As earlier stated, information overload could lead to stressful situation for managers and users of information. In identifying seven fallouts of information explosion Elson (1999) succinctly came up with the following as fallouts of information explosion.

(i) Despite availability of large quantity of information, one seems to be knowing less because the quantum of what is know is insignificant to available information.

(ii) Too much information leads to brain freeze or fatigue. And the response to this could even be information avoidance. Doing this could also make a user to loose or miss valuable information.

(iii) Information explosion or overload could also lead to information addictions in which the urge to get more information could lead to over dependence on sources such as the internet. The effect of addiction is drop in productivity which could lead to spamming in which organizations restrict the type of information that employees could have access to with official equipment and facility.

(iv) Shorter attention span

(v) Long-range thinking stops because virtually all information needed is available in large quantity for a user to select from and from varied sources.

(vi) With avalanche of information available especially the uncensored ones there could be information contamination which could lead to wrong decision making and serious mistakes.

(vii) Information Explosion also makes one think of the past and immediate future without adequate attention to the present.

In order to confront the problem of personal information overload. Elson further recommends the following:

- Take regular information break by monitoring communication facilities such as Cell-phone, Fax, Personal Computers, television, newspaper, Internet and even e-mail. If necessary electronics could be turned off while spams could be activated for e-mails to reduce being inundated with unnecessary information.
- Call in experts to sift the corn from the shaft i.e. knowledge managers to identify relevant information.
- Serious self-examination of what is right what is wrong and what information is required subsequently.
- Learn what others are doing successfully to curtail data tsunami. Watch selected programmes on television.
- Write shorter and precise memos in your office and encourage others to do the same.
- Invent personal solutions to information deluge and if it works for you share it with others.

All the above are on curtailing personal information overload occasioned by information explosion, the next stage of this paper is to look at the place of Library and information centres in the era of Information Explosion.
Libraries and Information Centres, Information Explosion and Information Technology

In “Libraries and Information Centres: Activities and Management” (n.d.), Libraries and Information Centres were treated as one or used interchangeably. While it could be acceptable that they both perform the same function of traditional librarianship namely:

- Collection development
- Cataloguing and Classification;
- User Services (reference and users education)
- Provision of physical structure for information access and local meeting place and
- Conservation and preservation.

An Information Centre would be distinguished from a traditional library because it is dedicated to providing specific information such as United Nations Information Centres (dedicated to provision of information about the United Nations and its agencies (Kadiri 2002), European Information Centres (providing specific information about the European Union member countries). Information Desks at airport – dedicated to flight information and Rural Information Centres as recommended by Oyelude and Subair (2003), provide specific information for rural dwellers. From the five functions listed above, an information centre can function by focusing on the latter three, while a library traditionally functions on all the five. For example, the European Union initially located its Information Centres in public libraries relying on available information in those libraries before centres were relocated and became autonomous. It is therefore not out of place to say that information centres require the services of the library to package information to be disseminated. In this age of Information and Communication Technology therefore, an information centre could be distinguished from a conventional library because it relies more on the use of electronics (i.e. ICT) in information delivery, while libraries on the other hand are making use of Information Communication Technology in processes hitherto carried out manually as well as in information delivery to its users.

Information and Communication Technology

Ogunsola and Aboyade (2005) extensively quoted several definitions of Information and Communication technology from ESCAP (2000), Marcelle (2000) and the World Bank (2000). These definitions averred that Information and Communication technology is “the set of activities which facilitate by electronic means the processing, transmission and display of information. Some other definitions dwell on listing what constitutes Information and Communication Technology. The components of Information Communication Technology listed include computer, radio, television, telephone (mobile and stand) internet connectivity. It is the connection of computers that brings about Local Area network (LAN) in which two or more computers are connected within a short location or the Wide Area Network (WAN) in which computers in different geographical locations could connect each other and share mutual information. While the Local Area Network could be done through fibre-optic both Local Area Network and Wide Area Network could be connected via the internet. The introduction of the World Wide Web (WWW) even make it possible to access information from other domains.

Information and Communication Technology and Libraries

Information and Communication Technology not only encourage creation and sharing of information but also accounts for automation of library system in which machines (computers) are now used to perform those activities that are hitherto performed manually in a traditional library set-up. The activities include collection development, cataloguing and classification, and Selective Dissemination of Information (SDI). Other benefits of Information and Communication Technology in Libraries and Information Centres include accuracy of information gathering, time saving (thus accomplishing one of the laws of traditional librarianship) and efficient use of space. The issue of space is even more glaring where information centres are the focus. A typical information centre might not need more than one or two computers with internet connectivity to function efficiently.
According to Alabi (1994), computer awareness has become imminent in Nigeria such that training in computer has become widespread in Nigerian tertiary institutions. However, there is no policy to back-up the area of information policy in relation to technological aspect. A cursory look at the Library and Information Centre sector viz-a-viz information technology revealed that Information Communication Technology is yet to be fully embraced in spite of its attendant advantages. As at the moment, none of the State public libraries in Nigeria could be said to be automated. Academic Libraries on the other hand have taken some steps ahead of public libraries in the area of automation and use of internet in information provision. Most academic libraries in Nigeria support their book-stock with E-Content or internet facility, which enables their users to have a feel of benefits of Information and Communication Technology. It is therefore not surprising that the bulk of literature available in Nigeria in the area of Information Communication Technology and libraries are mostly from the academic library sector. Discussions in most of the papers are mostly surveys highlighting availability and use of Information and Communication Technology equipments, knowledge manager’s and user’s awareness, infrastructural problems and funding.

The World Bank sponsored project of the 1990s indeed created awareness among academic libraries on the place of computer in libraries but up till now, no Nigerian University library can claim to be fully automated and effectively exploiting the internet for information. The common feature is to establish an electronic library by connecting to some database overseas for access to information while working on the aspect of automation of library processes.

It could be concluded therefore that while libraries and information centres in Nigeria are aware of the extensive information available on the net, they are yet to embrace ICT fully for the purpose of information packaging and delivery.

**Information and Communication Technology Utilisation in Nigeria: Challenges**

As earlier mentioned most of the literature on ICT utilization in Nigeria focused mainly on the academic sector and this is due to the importance of current information to teachers and students. From year 2000, articles abound in various library journals – local international and on-line sources on availability and use of ICT in academic libraries. Some like Ogunsofa and Aboyade (2005), Ogunsona (2005), Okiy (2005), Ossei (2010) and Ifijeh (2010) among others discussed extensively on issues (availability, use and knowledge) of Information and Communication Technology and digitization in academic libraries in Nigeria. Others like Kadiri (2004) and Egunjobi (2006) looked at the attempt at library automation among Colleges of Education Libraries. Omagbemi, Akintola and Olayiwola (2004), Ogundote (2008) and Obasuyi (2006) focused on internet use in tertiary and research institutions. In recent time, papers are being published documenting extent of availability and use of Information Communication Technology among private universities, Information and Communication Technology is playing impressive role in service delivery and some of the contributors include Ifijeh (2010) and Ijirigbo (2009).

According to Ani (2007), common challenges identified in various reports and surveys include knowledge awareness, infrastructure, funding, and attitude of policy makers among others. Odwotole, Oyewunmi and Oyesiku (2002) identified high cost of telecommunication facilities as a challenge to availability of Information and Communication Technology facilities in Nigerian University libraries.

- **Knowledge Awareness**

  The level of understanding of different aspects of Information and Communication Technology is still low among librarians in Nigeria. While basic awareness is visible, librarians are yet to fully embrace other technical aspects such as programming, web designing and engineering. Most libraries in Nigerian Universities rely on the University Computer Centres or Information and Communication Technology Units for maintenance and solving minor computer problems.

- **Infrastructural Challenge**

  - **Knowledge Awareness**

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One municipal facility that is the bane of Nigeria at the moment is supply of electricity. Electricity, which is an essential necessity for economic growth is lacking in Nigeria as a whole. Without electricity, it would be difficult to exploit the best that ICT could offer. Erratic supply of electricity has in some cases led to destruction of equipment in Nigerian libraries (Kadiri, 2004) as it does to domestic equipments in homes as well. Attempts to redress this with the use of generators is hampered by the high cost of fuel i.e. petrol and diesel.

- **Funding:**

Funding of libraries by governments – Federal and States in Nigeria is nothing to write home about. Hence libraries both public and academic are constrained in embracing ICT thus depriving library and information seekers benefits inherent in ICT.

- **High Cost of Information and Communication Facilities**

Corollary to the above is the high cost of acquiring Information and Communication Technology facilities. While the cost of acquiring computers might be falling, the cost of internet connectivity and subscription to E-Contents is not within reach of some academic libraries especially state owned institutions.

- **Lack of Policy on Information Communication Technology:**

There is no robust policy on the part of government as far as Information and Communication Technology is concerned. This hampered the growth of the Information and Communication Technology sector in Nigeria as a whole. According to Alabi (1994) though Nigeria has Science and Technology Policy but there is no policy on Science and Technology on Information.

**CONCLUSION**

The foregoing established the fact that Information Explosion preceded Information and Communication Technology however, Information and Communication Technology complicated the situation as it exponentially increase information available especially through the internet and the World Wide Web. Despite this, it is the emergence of Information and Communication Technology that came to the rescue of information and knowledge managers in confronting the menace of the explosion. It enables them to manage mirage of available information - either in selection, ordering, process, preservation and packaging for delivery-. Information and Communication Technology further played down the place of physical structure as epitomised by traditional library as specialized information centres can take care of specific groups without gigantic structures.

In the case of Nigeria, it was shown that there is evidence of awareness of Information and Communication Technology among knowledge managers and users, however, its exploitation is constrained by limited knowledge of ICT, Infrastructural problem, funding, high cost of Information and Communication facilities and lack of policy to move the sector forward by government.
RECOMMENDATIONS

Charletain (2009) proposed eight things that information users and managers need to know in order to manage information explosion and broadly they are: Obtain senior executive sponsorship i.e organizational involvement; Papers still cool: organizations need to leverage best practice from the physical world; Define the policies that will govern your enterprise information; Define processes you will use to manage information; Stay in constant communication and use a shared vocabulary; Educate, Educate and Educate again; Recognize technology is a mean not an end and Don’t forget to prove the business value.

Recommendations above, recognize the issue of policy, integration of ICT and traditional librarianship, which is akin to the suggestion in “Libraries and Information Centres” (n.d.) that “hybrid libraries should emerge in which ICT and printed materials are integrated. And perhaps the most important of the recommendations is the one emphasis the issue of education.

Specifically, Nigerian libraries, librarians and other information practitioners should address the following:-

In view of the importance of Information and Communication Technology in the information sector, library schools need to be on their toes in reviewing their curricular to meet the demands of Information and Communication Technology by introducing courses in programming, web designing and facility maintenance.

Secondly, constant education and re-education of information and knowledge managers in Nigeria becomes a necessity in view of ever changing and development in Information and Communication Technology facilities.

Thirdly, this is the age of information amount and quality of information available has implication for economic, socio-political development of any country. If is in the light of this that adequate funding is recommended for information providing agencies such as libraries (public and academic) electronic and print media et cetera. Adequate funding will mitigate the problem of availability of facilities as well as meet the high cost needed to procure equipment.

Fourthly, in order to reduce cost of acquiring information governments and institution should be thinking of forming consortia. For example, the virtual Library of the National Universities Commission (NUC), which serves Federal and State Universities, was the brainchild of the Committee of University Librarians of Nigerian Universities (CULNU). On the request of CULNU to Education trust Fund (ETF), ETF provided the fund needed to NUC. As the subscription is living soon, CULNU has set up a consult. NULIB Consult to negotiate on behalf of university for a cheaper rate as it appears the ETF might not find renewal.

At government level, States can subscribe to databases on behalf of their public libraries and tertiary institutions as obtained in State of Northern Colorado in the United States of America (2008).

Finally, Information and Communication Policy is by far the most important tool that can and availability of information beyond tertiary institutions. It involves the issue of information sharing as canvassed for in the Freedom of Information Bill recently passed by the National Assembly. The policy will also make it mandatory that information be targeted at the grassroot or rural areas and rural populations. With the establishment of Rural Information Centres specific information in the areas of health, farming, among others could be made available. Such information centres called Telecentres abound in developing countries of Africa and the Carribeans.
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