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Preservation Reformatting Strategies in Selected Sub-Saharan African Archival Institutions

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Abstract

Preserving and providing access to records and archives are some of the major reasons for the existence of archives. The need to preserve records and archives arises from their format, the environment in which they are stored, and frequent handling and use. While archivists are aware of the preservation challenges they face in the management of records, their major dilemma lies in choosing an appropriate preservation method. A variety of products available in the market claim to provide preservation solutions as well as guaranteed continued access to archives. However, microfilming and digitisation are the two widely used reformatting products. The choice of the reformatting strategies has a profound impact on how archival institutions manage and deliver information. The issues at stake are: Can digitisation be used as a tool for the preservation of archives in Sub-Saharan Africa? Will microfilm become obsolete?

It is evident that until feasible solutions to preserving long-term access to digital documents are developed, microfilming will remain the most appropriate preservation strategy for archivists, especially, in the developing countries. These expensive digitisation projects are often impeded by scarce resources and scant research in digital preservation. Presently, digital conversion seems to be attractive only in terms of enhancing access to documents.

Introduction

The concept of preserving access to documentary materials is not new. Preservation is concerned with ensuring long-term access to information and cultural artefacts of value. Humankind has always been preoccupied with preserving access to its documentary heritage. Essentially, documents are created for the use of their originators as well as their descendants for as long as they are needed. The

presumption is that documents are preserved in order to make them available for use. Thus, the preservation-access model as a way of managing documentary materials is not a concept peculiar to the twentieth and twenty-first centuries as we are led to believe. Circumstances have ensured the variability of the preservation strategies that have been employed over time as well as the emphasis that has been put on the preservation and access depend on each other.

Before the advent of reformatting, documents were stored under conducive environmental conditions in order to safeguard them from deterioration. For instance, the Prophet Jeremiah in the Bible (Jeremiah buys a field 1976, Jeremiah 32 verse 13) underscored the importance of preserving access to documentary evidence when he told Baruch that:

> The Lord Almighty, the God of Israel, has ordered you to take these deeds, both the sealed deed of purchase and the open copy, and to place them in a clay jar, so that they may be preserved for years to come (Jeremiah buys a field, 1976).

The preservation strategy advocated by Jeremiah and his contemporaries served them well during their time because the paper that they used to create records did not contain seeds of its own destruction. The same preservation approach cannot be used with reasonable success with the paper produced during the late nineteenth and early twentieth centuries. The paper production methods used during the late nineteenth and early twentieth centuries period were faulty. From about 1840 paper manufacturers stopped using cotton and linen rags in the production of paper, in favour of the cheaper ground wood pulp (Foot, 1994; Smith, 1999). It resulted in the production of acidic paper with high lignin levels and a short life-span. When paper made of wood pulp reacts to humidity and heat, it becomes brittle. Novelist Nicholson Baker recently rocked the library and archival world by charging that librarians in the United States and elsewhere have underrated the long-lasting power of paper as a medium for preserving knowledge, preferring technologically fashionable but inferior solutions such as microfilm (Baker, 2001). However, scientific research has shown that wood pulp paper becomes brittle if stored in poor conditions (Ogden, 1999).

In many developing countries most documentary materials are still being produced on acid-based wood pulp paper. There has been a conspiracy of silence on the quality of paper. The paper problem is rarely addressed. It is evident from the national technical standards on paper that many countries in the developing world have not taken significant steps to improve the quality of paper production, especially for works of permanent value, and to require the use of acid-free paper through government legislation. Procedures to chemically stabilise acidic paper to extend its life are also nonexistent. Although treatments to stabilise the documents are available, the costs are prohibitive and funds to address this problem seem to be limited. Be that as it

may, deacidification only arrests further deterioration but does not strengthen paper (Gwinn, 1987).

Because archivists in developing countries have a responsibility to acquire and make available the documentary heritage for present and future generations, they must develop strategies to prolong the life of information in the archival materials. Archives must be preserved because they are the key to accountability and good governance, knowledge management and national memory. In fact, they reflect the society's functions, activities, procedures and processes that led to their creation. For the past two decades, high-volume preservation efforts and funding have focused on reformatting or copying information from unstable originals to media with proven and verifiable standards for longevity (Preservation Resources Microfilms, 2001). Reformatting activities have encompassed photocopying, microfilming and digitisation.

Although reformatting is generally associated with safeguarding materials on a medium that is threatened by instability or technological obsolescence, it can also be used to shift use from original documents. Microfilming can provide a secure backup for originals in case of loss. Additionally, photocopying and digitisation can also be used to enhance access to documents. It must be pointed out from the outset that while reformatting may preserve the content of a document, it does not always save the actual object. This explains the wide acceptance of the definition of preservation as prolonging the life of information in documents, rather than the documents themselves (Kenney, 1990; Ritzenthaler, 1993).

The choice of a reformatting method is dictated by the objective to be achieved. Archivists must make appropriate decisions as reformatting remains the only feasible long-term strategy for dealing with the preservation problems posed by deteriorating media. Yet, archivists, in the highly technical world of preservation reformatting, often find themselves being uninformed lay persons. They are often at the mercy of technological vendors and what they promise their products can do to provide preservation solutions of all kinds as well as guaranteeing access to archives. Archivists often find themselves in a quandary as to which vendor to believe. The safeguard is for the archivist to be knowledgeable enough to appreciate the advantages and disadvantages offered by various reformatting techniques. This article therefore, seeks to highlight the relative shortcomings and benefits offered by current reprographic reformatting methods. In the event that archivists start thinking critically of the importance of evaluating, reformatting and preservation technology, and planning and implementing sound preservation strategies, this article would have achieved its objectives. Starting with the scope and definition of terms, the paper focuses on the relative advantages and disadvantages of reformatting methods paying particular attention to microfilm and digital imaging. It concludes by giving suggestions on how archivists should implement their preservation programmes.

Scope and Definition of Concepts

The conclusions made in this study are based on the literature, Internet searches and informal electronic mail communications with directors of National Archives. The scope of the discussion is limited geographically to Angola, Botswana, Ghana, Kenya, Lesotho, Malawi, Mozambique, Namibia, Nigeria, Seychelles, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. As opposed to other countries in Sub-Saharan Africa (SSA), their archival preservation programmes are well documented in the literature and the Internet. The preservation and reformatting of audio-visual materials is beyond the scope of this paper. Although the fundamental principles of preservation apply to all formats, from print to electronic, the techniques and costs of the various treatments differ dramatically. Equally, the technical aspects of reformatting have been discussed in numerous books, web sites, conference proceedings and journals, and that ground is not covered again in this article. Copyright issues and their implications to reprographic activities are also beyond the scope of the paper. The focus is on some conceptual issues associated with reformatting as they pertain to preservation options.

The usefulness of the study is contingent on the clarity of the key terms it employs. Reformatting, digitisation, microfilming and photocopying are key terms in this paper.

Reprography or reproduction, an umbrella concept concerned with the reformatting of documents plays a major role in preserving information in them. Reformatting is the copying of archival materials from one medium to another irrespective of format. For instance, deteriorating and brittle documents are copied onto more stable materials like silver halide microfilm or alkaline paper; and decaying nitrate negatives are copied onto stable film to ensure that they remain usable.

Digitisation is characterised by scanning analogue images, text and sound recordings to produce digital copies that can be used in an electronic environment. Microfilm is a micrographic format in the same classification as aperture cards, computer output microforms (COM), microfiche jackets, sheet film and micro-opaque (Kormedy, 1989).

Microfilming is a photographic process of producing reduced images on a roll film, which usually requires optical assistance in order to read the intellectual content of documentary materials, following the standards and specifications necessary to provide optimal bibliographic and technical quality (Acland, 1993; Gwinn, 1987).

Photocopying is a photographic process of reproducing copies of documents. The major methods of photocopying include silver halide and ozalid (photostatting and microfilming); plan (architects' drawings and engineers' plans); transfer; and thermographic and electrostatic (xerography) (Mason, 1968). Xerography is the most widely used method of photocopying (Crystal, 1997). In fact, the process is popularly almost synonymous with photocopying. Xerography uses the photoelectric phenomena to transfer an image from one sheet of paper to another. The term comes from the Greek words for "dry" and "writing" (Crystal, 1997). The technique was first demonstrated by Chester F. Carlson a few decades ago. Although photocopying applies to photographic reproduction of copies, it has been used in this study in the narrower sense of copies that can be read with the naked eye and produced through the process of xerography. In any case most photocopies work on the principle of xerography (Crystal, 1997).

Preservation Strategies

The three common preservation strategies are photocopying, digitisation and microfilming. Each of these strategies will be discussed in detail.

Photocopying

Photocopying in most archival institutions in Sub-Saharan Africa (SSA) is primarily done for user convenience. Photocopying is done to get around the task of transcribing archives. Some researchers order photocopies to avoid the expense of travelling and the time involved. It is also done to make some additions to the collections. Although photocopying is faster and cheaper than microfilming and digitisation, it exposes the paper to agents of deterioration such as heat and light. Additionally, only flat documents can be easily copied. While paper is cheaper than film, photocopies lack permanence if they are not done on acid-free paper using a machine that produces a thermoplastic image by heat and pressure fusing through electrostatic charges (Gwinn, 1987). In the case of SSA where there are no widely accepted standards for permanent paper, there can be no guarantee of acid-free paper being used. Therefore, photocopying is not generally considered as a preservation strategy. It is no wonder that a recent Joint International Federation of Library Associations and Institutions/International Council on Archives (IFLA/ICA) Committee on Preservation in Africa (JICPA) survey established that preservation photocopying programmes were nonexistent in Africa (Coates, ,2000).

Digitisation

The debate on the use of digitisation technologies is growing in popularity in the archival community because digitisation seems to offer excellent prospects for significant benefits for both archives and archives users. But digitisation also raises considerable preservation problems. Although there are positive benefits to

digitisation, particularly in providing remote and enhanced access to information, it is inadvisable to regard it as a panacea for all of the problems of preserving documents (Lehmann, 1996). In the same vein, Crawford (1999) pointed out that the notion that digitisation is a "solution to preservation and changing formats is a mistaken presumption." Strictly speaking, preservation problems are not minimised by relying on digital information, in effect we only increase them. For instance, digitisation may actually encourage demand for access and display of some originals, and deepen, rather than alleviate, preservation problems. In fact, Smith (1999) has argued that digitisation has made a challenging preservation problem only worse.

Under the present circumstances, it would be very risky for institutions to digitise traditional documents (Conway, 2000). The risks involved are associated with five major issues that need to be addressed in order to ensure the preservation of digital documents. First and foremost, digitisation is tremendously expensive (Conway, 2000; L'Homme, 1999; Saffaddy, 1999). Be that as it may, many professional conferences on digitisation and publications dealing with the subject rarely examine cost implications and the issue of affordability (Saffaddy, 1999). For all practical purposes, digitisation is costly to implement. The costs are in the form of hardware and software, user training requirements, manpower to sustain the system, converting archival materials to machine-readable form and maintenance. Huge digital files can also be expensive to store and difficult to transfer. The cost implications are often ignored by many digital technology enthusiasts. Secondly, the medium is unstable as compared with "traditional" information carriers such as paper or film. For instance, the useful life of magnetic tape is estimated at a year, magnetic disks at five to ten years, and optical disks at 30 years (Balas, 2000). No digital medium offers the life expectancy of permanent paper or film (Crawford, 1999). Thirdly, access to digital information is dependent on machines and software. If the appropriate technology is not available, it is not possible to hold the digital medium up to the light, or to read it through magnification as it is the case with microfilm. Fourthly, rapid technological changes in the digital information industry and market inevitably lead to media obsolescence (Kuny, 1997). Technologies are changing very fast; for instance, punched card readers are now "nonexistent". Five and quarter floppy disk drives are now obsolete and becoming difficult to locate or use in conjunction with the generation of personal computer hardware and software used in the modern technological age. Rapid technological changes threaten to render the life of information in the digital age as, to borrow a phrase from Thomas Hobbes, "nasty, brutish and short" (Hobbes, 1952). Fifthly, electronic data deteriorate over time, especially when it is not compliant with generic document standards, such as the Extensible Mark-up Language (XML) and the Standard Generalized Mark-up Language (SGML). Thus, data emulation and migration are necessary to maintain the integrity of the data. Consequently, the need to guarantee "technological access" to information is one of the major problems posed by digital formats.

Additionally, the world of electronic information is still at an embryonic stage in terms of preserving digital information (Task Force on Digital Archiving, 1996). Unlike the case with microfilm, procedures and standards for digitisation are still evolving. In fact, sustainable solutions to digital preservation problems are not yet available (Kuny 1997). Institutions considering digitisation projects will need to become well informed on the topic as well as drawing from the experience of others before planning their own projects. For instance, the Colorado Digitisation Project (CDP) has looked to leaders in the field, including the Library of Congress, Cornell University, the University of California, Berkeley, the Online Computer Library Centre (OCLC), the Council on Library and Information Resources, the Digital Library Federation, as well as international groups in the United Kingdom and Australia for guidance on standards in its digitisation programme (Colorado Digitisation Project, 2001).

Thus, digitisation should be considered as one of the tools that constitute the preservation tool-kit rather than a complete answer to long-term access to archival documents. In fact, a recent report on the intrinsic value of documents explicitly rejected the use of digital imaging for preservation purposes because of loss of evidential value and permanent accessibility inherent in digital forms (Menne-Haritz and Nils, 1999). Presently, most preservationists hold the view expressed at the 1995 Libraries Research Group (RLG) Digital Selection Symposium, that "digitisation appears to have a preservation role in reducing use of originals . . . but appears not to be suitable for preservation of information that is preserved in no other form" (Ogden, 1996).

The use of microfilm for preservation and digital imaging for improving access, or the hybrid approach (Chapman *et al.* 1999) has been acknowledged (Menne-Haritz and Nils, 1999) as the only feasible way of benefiting from the relative advantages offered by both technologies. The hybrid approach will make it possible for those readers who find microfilms awkward and unpleasant to work with to have access to digital information. Accordingly, digitisation should be employed to provide the benefits such as remote and multiple access, speed of retrieval, searchability, and high storage densities compared with paper and film. On the other hand, microfilming would take care of the preservation side of things. Essentially, digital conversion should be confined to materials that are in demand, regardless of their condition. Under the present circumstances where standards for digital preservation are nonexistent the basic purpose of digitisation should be confined to creating reproductions that can be viewed by as many people as possible, and as easily as possible.

In that regard, preservation microfilming and digital conversion can overlap to provide access as well as rescue materials that are both endangered and in demand. Before concluding this section, it is note worthy that the hybrid approach that marries microfilm for preservation and digital imaging for access is still an expensive option.

Rather, archival institutions should continue to use microfilm for preservation reformatting and only turn to digitisation as a means of enhancing access. In any case, conversion from microfilm to digital formats is possible though very expensive (Chapman, Conway and Kenney, 1999).

Microfilming

Despite predictions (Dalton, 1999; Smith, 1990) that microfilm could be replaced by digital imaging, users of this technology have come to appreciate that simply digitising material does not guarantee its continued preservation. Until digital preservation capabilities can be broadly implemented and shown to be cost-effective, microfilm will remain the primary reformatting strategy for deteriorating paper-based records. Microfilm offers acceptable levels of quality, media longevity, and little machine dependency.

The master negative silver halide microfilm, if properly created and stored according to international standards, boasts a life expectancy of about 500 years (Dalton, 1999). The microfilm industry is very mature with a well-established technology and defined standards developed with the cooperation of users and manufacturers, scientists and researchers (Kuny, 1997; Saffady, 2000). The creation of preservation microfilm since the early 1980s has been governed by a well-defined set of international standards that specify the preparation of documents, bibliographic control, the physical composition of the film media, processing techniques, the visual quality of three generations of film, and storage requirements. In other words, metadata standards on microfilming are clearly defined and widely accepted than those in the electronic environment.

Microfilming, while not perfect, has proven to be an effective technology for preserving archival materials vulnerable to damage and loss through handling and poor environmental conditions as well as facilitating shared access to endangered research materials. It can also enable readers in distant locations to gain access to the content of archival materials without actually visiting the archives repositories. It is also worth noting that while digital data requires the use of a sophisticated retrieval system to access its treasures, microfilm can be read by the naked eye using only light and magnification. Contrary to Foot's (1994) view, microforms are relatively inexpensive to produce and to copy. The converse of the view held by Foot (1994) is that microfilm can capture all types of images and can be successfully applied to all documentary materials (Dalton, 1999; Saffady, 2000). One key indicator of the continuing relevance of microfilming as a reformatting and preservation strategy is its ongoing support at the international level. For instance, recently, the International Meeting on Microform Preservation and Conservation Practices in Southeast Asia, on assessing current preservation needs and evaluating past projects, reaffirmed that microform remains the primary reformatting medium for long-term preservation of the contents of library and archival materials, providing that international standards

for production and storage are adhered to (Brown, 2000). The experts at that meeting also endorsed the fact that emerging new technologies such as digitisation may be useful adjuncts for access and image-capturing, but must not be seen as substitutes for preservation on microfilm.

The strengths of microfilm are clear: saving space, maintaining file integrity, providing security copies of vital records, easing duplication and distribution, easing integration with computer systems (COM), and preserving information (Lowell, 1985). Additionally, there are internationally accepted standards for microfilm. Film also has a proven life-span of 500 years and can be read in an emergency with nothing more sophisticated than a lens or a hand-held viewer. In that regard, preservation microfilming has quietly maintained its status as a highly valued and widely practised preservation reformatting strategy amidst the bells and whistles of the digital revolution (Ogden, 1999).

State of Preservation in Selected Archival Institutions in Sub-Saharan Africa

Materials in most archival institutions in Africa are steadily deteriorating and some have already deteriorated beyond repair due to their format, frequent handling and use, climatic and environmental conditions, and lack of care due to inadequate financial resources. A survey of the archival situation in Africa carried out on behalf of the ICA and United Nations Educational, Scientific and Cultural Organisation (UNESCO) reflected the same position (Mazikana, 1992). The situation is growing worse despite the existence in Africa of a new crop of records with "dynamic new solutions" (Thurston, 1996). In fact, the preservation of archival materials has been characterised as a crisis area in South Africa (National Archives of South Africa, 1997; Olivier, 1999). It is evident that some of the paper-based materials are deteriorating to the point of embrittlement and cannot survive much further use. In addition, some materials are deteriorating due to excessive handling by users and archives staff alike.

Fragile and embrittled archival materials can be saved if some form of intervention is instituted. One option is to adopt reformatting strategies that have internationally recognised standards. On the other hand, archival institutions can withdraw the materials from circulation and safely lock them away in vaults. The potential of exercising the latter option is very high in many archival institutions in Africa. In fact, archival legislation in Africa underscores a uniform approach regarding access to fragile records (ICA, 1996).

It is surprising that some still have recourse to locking documents away as a way of preservation when statesmen of the eighteenth century censured the idea of locking away documents as a way of safeguarding them from further deterioration through handling and use. For instance, Thomas Jefferson, a former president of the United

States and architect of the Declaration of Independence, once wrote to Ebenezer Hazard emphasising the fact that locking away documents in vaults does not save them from deteriorating. In his own words:

> I learn with great satisfaction that you are about committing to the press the valuable historical and State papers you have been so long collecting. Time and accident are committing daily havoc on the originals deposited in our public offices. The late war has done the work of centuries in this business. The lost cannot be recovered, but let us save what remains; not by vaults and locks which fence them from the public eye and use in consigning them to the waste of time, but by such a multiplication of copies, as shall place them beyond the reach of accident (Jefferson, 1791).

It is evident that preservation goals cannot be achieved through preventing access on the basis of their degree of deterioration or otherwise. Archival institutions, particularly in SSA, should take a cue from Thomas Jefferson and reproduce all endangered documents so that they remain accessible to the public. Reformatting or copying original items to produce a version that can be used instead of the originals should be widely encouraged in archival institutions in SSA as a way of addressing the conflict between preservation and access. Although there are no clearly laid down policies on preservation in SSA many archival institutions do undertake some preservation activities to save deteriorating information media (Moyo and Ngulube, 2001).

Microfilming is the widely used strategy for reformatting deteriorating documents, and filling documentary gaps in national archival holdings. Many countries in Africa have considerable experience in using microfilming technology to preserve and increase access to archival collections. Microfilming has also been widely used to repatriate "migrated" archives from the capitals of the former colonial rulers of Africa. For instance, 25, 309 exposures of duplicate negative microfilm of Colonial East Africa Correspondence between 1927 and 1954 were delivered from the Colonial Record Office in London to the National Archives of Kenya in 1992 (Farrington, 1994). Recently, the JICPA survey on preservation issues in Africa confirmed that microfilming equipment is widespread, chiefly in national archives (Coates, 2000).

Digitisation has been generally confined to finding aids rather than the actual archival collections. Most of what could be regarded as digital archival implementations undertaken to date are much too limited in scope to replace conventional archival operations. According to the UNESCO/IFLA directory of digitised collections, the only significant projects to digitise documents reported to be taking place in the ambit of preservation in SSA are in Ghana and South Africa (UNESCO/IFLA, 2000). The Cultural Patrimony of Ghana Collection and the Digital Imaging South Africa (DISA)

projects seem to be purely concerned with access and have little to do with the preservation of the materials being digitised.

For instance, the aim of the DISA project, based at the Killie Campbell Collection in South Africa, is to make accessible to scholars and researchers world-wide materials relating to South Africa's struggle for democracy between 1960 and 1990. The emphasis of the project is on periodicals. However, in building their digital collections and designing effective access to them, preserving the longevity of the digital information should be part and parcel of the project. The problem should be tackled right from the beginning because no matter what the digitisation goals are, there will eventually be a preservation angle (Gertz, 2000). Being donor-driven (Digital Imaging South Africa 2001), the DISA project should have built in provisions for future migration of digital information into their project (Klijn and de Lusenet, 2000). This will ensure the survival of the project when sponsors withdraw their support. It should be borne in mind that the long-term maintenance of digital collections is tremendously expensive and many institutions find it difficult to carry on with the projects once the sponsors withdraw their support. It does not seem cost effective to create digital objects without guaranteed continued access. It has been noted that the "most time-consuming and costly aspect of digitisation projects is the description required to facilitate searching" (Klijn and de Lusenet, 2000). One wonders if the archival institutions in Africa have the capacity to adequately describe digital archives given the fact that many institutions are facing serious backlogs in the arrangement and description of non-digital records. For instance, it was in the light of the fact that many archival institutions in Southern and Eastern Africa were reeling under serious archival processing backlog problems that the Fifteenth General Conference of the Eastern and Southern Regional Branch of the International Council on Archives (ESARBICA) held in Zanzibar from 26 to 30 July 1999 urged the member states to clear backlogs in order to facilitate access to archives (Harris, 1999). If they cannot effectively manage traditional paper-based records what more with digital management programmes?

A recent research investigation by Moyo and Ngulube (2001) established that many countries in SSA did not have archival preservation policies and plans. That is indicative of the fact that institutions have not seriously committed themselves to prolonging the life of information in their archival documents. Archival institutions should put their act together before thinking about digitisation. According to Conway (2000) digitisation requires a deep and longstanding institutional commitment to traditional preservation for it to be practicable. The fact that many archival institutions in SSA do not have clearly articulated preservation programmes raises a lot of concerns about their ability to implement emerging digitisation procedures when they do not have any grounded experience in the traditional preservation techniques.

Although digitisation has been characterised as the technology of the future (Garcia, 1994), SSA needs to do more research in the area of digital preservation before flirting with digital technology. There is an urgent need for research to be undertaken into electronic data formats like SGML, XML and Portable Document Format (PDF) as well as the actual costs of preserving digital materials. Archivists need to be clearly informed of the cost-effectiveness of digital preservation solutions as compared with other techniques before plunging into the unknown future. Prior to adequately addressing preserving and promoting access to digital information resources through training, and research into procedures and standards on digital preservation in SSA (Ngulube, 2001), it is evident that reliance should be placed on microfilm as a preservation reformatting method.

Technological enthusiasts should not despair: they might be able to digitise their microfilmed holdings whenever digitisation becomes an acceptable preservation reformatting method. It should be borne in mind that if microfilm is produced according to the recommended international standards, it lends itself easily to digitisation. Thus, it will be possible to scan from the microfilm in the future to create digital archival resources.

The Way Forward

All physical formats, from paper to magnetic tape, will decay over time (Nugent, 1997). The storage environment and physical handling and use compromise all formats. Although resources are limited, Sub-Saharan African archival institutions should commit themselves to preserving archival materials. Reformatting is key to addressing preservation problems posed by deteriorating media. Taking into account the rapid technological changes in the digital world and limited resources at the disposal of archival institutions in SSA, for the moment, the goal of reformatting should be primarily to ensure both increased access to, and preservation of, archival materials through preservation microfilming.

Additionally, there is an urgent need to address the quality of paper that is used to create records that eventually end up as archives. Archivists should ensure that the quality of paper used to create records of enduring value conforms to a recognised national or international standard. Archival institutions should also have preservation policies and plans. The plans should address matters related to staffing, technical specifications, equipment, finances, procedures, and implementation strategies. Planning will compel archival institutions in SSA to be committed to doing something about preserving the archival heritage in the wake of technological changes and deteriorating media. Archivists must choose appropriate preservation reformatting strategies. Their decisions must be informed by:

- clearly defined goals, encompassing both the challenges and opportunities for reformatting; and

- acquaintance with technical materials relating to preservation technology and archival materials.

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Website Design on Some Aspects of a People's Culture: The Binis of Edo State, Nigeria

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Abstract

The Benin Empire, is one of the most popular empires in African civilisation. It was also of major significance to Western civilisation because of its unique artistic skills, which was an indication of an already developed society. Using tape/video recorders, interviews and desk research, aspects of the culture of the Binis were captured and developed into a web site. The study also developed a Bini version of the site as part of the efforts towards promoting African culture. A combination of hierarchical and linear web site design methods were used and usability tests were carried out, using the two major Internet browsers, Netscape Navigator and Internet Explorer.

Introduction

Culture has been described as the totality of the way of life evolved by a group of people in their attempt to meet the challenges of daily living in their environment. It is not merely a return to the customs and beliefs of the past rather, it embodies their attitude to the future of their traditional values faced with the demand of modern technology, which is an essential factor of development and progress (Aig-Imokhuede, 1992). The culture tells the story of their collective lives, their behaviour and their response to change. An understanding, therefore, of the culture of societies could very well be a panacea for peaceful co-existence among nations and groups of people. The Benin Empire was one of the most popular empires in African civilisation. It was also of major significance to Western civilisation because of its unique artistic skills, which was an indication of an already developed society. According to Roth (1903), in the late fifteenth and early sixteenth centuries, De pina, Pereira and De Bairos amongst others, gave an impression of a Benin society that was already highly developed with an Oba who sent an ambassador to Portugal and

who ordered his son to become a Christian. The anonymous Dutchman, D.R (thought to have been Dierick Ruiters) at the beginning of the seventeenth century described a city with which he was obviously impressed. Roth (1903) went further to say that in the second half of the seventeenth century, Dapper referred to it as "Great Benin". Yet by 1702, Nyandel found the town depopulated and laid waste by a civil war. The eighteenth century seemed to be a time of some recovery. But by the later half of the nineteenth century, Burton and others gave an impression of a culture that was running down (Roth, 1903). It would appear then that Benin had reached a peak of cultural development by the sixteenth and seventeenth centuries.

However, the events of the Benin invasion of 1897 were to prove a turning point of major significance. They ended perhaps as much as 900 years of distinctive cultural development and by main force brought Benin within the confines of literate history. Thousands of examples of her arts were plundered and sold off as official spoils of war, by the British government (Roth, 1903). According to Berzock (1999), the artistic mastery of these works continues to surprise scholars around the world. In particular, Europeans and Americans had been surprised and captivated by the idealised naturalism of Benin bronzes and ivories, a trait they appreciated because of its seemingly adherence to classical Western qualities and the great skills of its makers.

Binis play a very important role in cultural development in Africa; in antiquity it was renowned for its greatness and civilisation on the banks of the Niger and was once the most powerful race in West Africa (Egharevba, 1968). Its moats (defensive trenches surrounding the city) are the world's largest earthwork before the use of technology. McClelland (1971) also stated that from the records of early visitors to Benin, the city was referred to as "Great Benin" because there was no other town of that size in the neighbouring countries. However, her power gradually dwindled till her fall in the punitive expedition of 1897, when she lost her importance and nothing but a fragment remains as a witness of her former greatness and splendour (Egharevba, 1968).

Works on the culture of the Binis have existed in time past, but these have mainly been in the form of oral and written literature. Myths and misconceptions exist about this ancient tribe that it is sometimes difficult for researchers and the younger generation to discover the truth about her roots. For example, some people believe that there still exist un-excavated artworks and charms at the sites of the nine different entrances into the ancient city. Many believe that these charms, which were placed there by Oba Ewuare the Great during his reign (1440-1473) to ward off intruders, might even now be affecting the pace of development within the city. Thus, there is a call for an excavation and construction of proper gates at the nine entrances to the city. There is also the interesting connection between Benin and the Yoruba race, which has caused historians to have a second thought about the roots of some African tribes. There are also several aspects of this culture, and indeed of other cultures, which only exist as oral literature. However, the advent of the Internet and

information and communication technologies offers a completely new way of providing and publishing information.

Studies have shown that the Internet is a veritable tool for promoting the concepts of cultural integration and globalisation. These studies also show that Africa contributes only about 0.4% of the vast information available on the Internet. As such this work was proposed to meet the following objectives:

- To promote African culture in general and the rich cultural heritage of the Benin empire in particular.
- To make available, more information (electronically) about the culture of the people to the Binis in Diaspora and for other users interested in African culture.
- To help preserve the identity of the people, particularly for its posterity.
- To inculcate a sense of pride in Africans in general and Binis in particular about themselves and their culture.
- To increase the African information content on the Internet.

In striving to increase Africa's information content on the Internet and promote African culture, it is necessary that African information professionals strive to provide information that is truly African. To promote an African culture, and indeed any culture, devoid of its native language, to say the least, is incomplete. Therefore, this work included a native version developed in the Bini language. The site was organised to provide information on such aspects as the history, works of art, marriage and coronation of the people. The site also comprised an art gallery, which was designed as a slide presentation. This was done to include active and dynamic content features necessary for modern website design.

Research Methodology

Since culture is the way of life of a group of people, this work was based on studying the life of the people and recording the data gathered. Thus, the data collection techniques employed in this work include interviews, desk research, observation and audio-tape/video recording.

Interview: The interviewees spoke about the way of life of the Binis and how some traditions have been handed down to them from generations. The category of people interviewed includes chiefs, scholars, craftsmen, eminent elders and other reliable custodians of culture.

Desk Research: Data were collected through desk research from libraries, national archives and other cultural institutes. An extensive use was made of their collection of information on the Binis and their culture.

Observation: Craftsmen were observed as they produced their works of art. Festivals, customs and other aspects of culture were also observed and recorded. Observations included both obtrusive and unobtrusive forms.

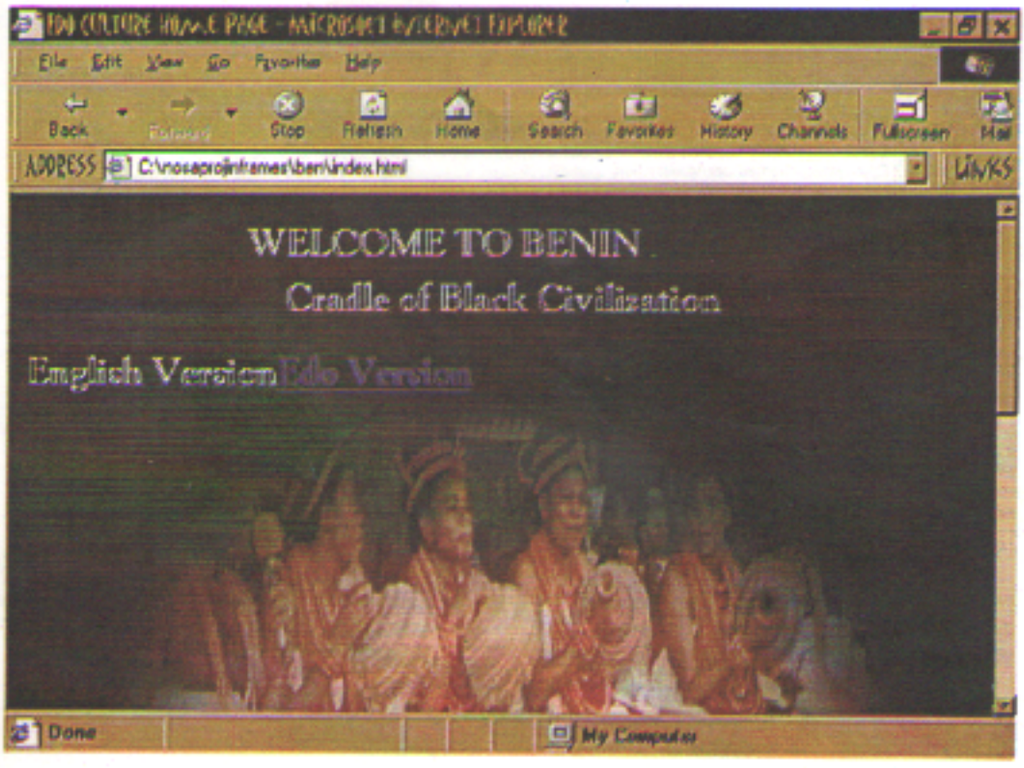
Audio Tape /Video Recording: The way of life of a group of people also comprises their oral culture, speech, sounds, folklore, etc which are sometimes embedded in their music. As such, musical data were also captured as well as pictorial data. The data- capturing equipment used include audio/video tape recorders..

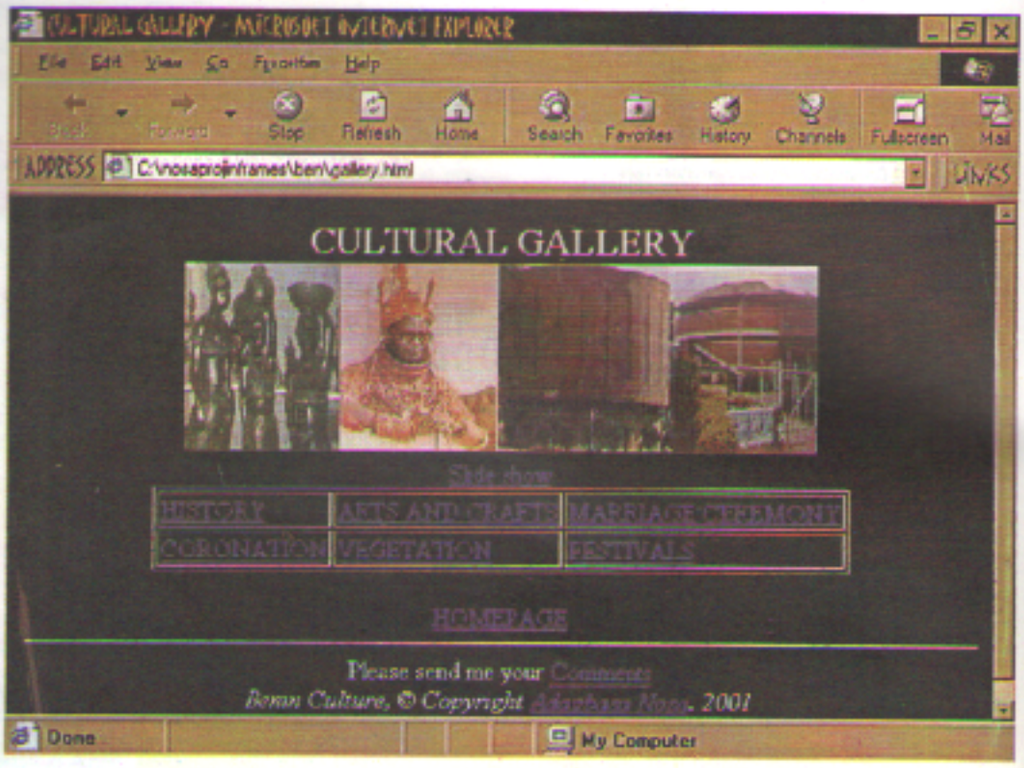
Design Philosophy

Just as with traditional modes of communication, the process of writing and designing web pages takes more planning and thought. This is because trying to apply the rules of traditional writing or design to online hypertext often results in documents that are either difficult to understand and navigate online or that simply do not take advantage of the features that hypertext provides (Lemay, 1997).

In designing web sites, there are basically three methods of organising the content on the site. These are *hierarchical, linear and web design*. For this site, a combination of hierarchical and linear organisation was used.

In hierarchies the home page provides the most general overview to the content below it. The home page also defines the main links for the pages further down in the hierarchy. Using the hierarchical organisation, readers can easily know their position in the structure. Choices are to move up for more general information or down for more specific information. The site also employs a linear organisation to cater for the sequential order of documents within the different levels of the hierarchy. A web organisation was avoided for this work. This is to reduce the possibility of navigators losing their way in the site. A strict linear structure was also avoided as such an organisation is very rigid and limits readers' freedom to explore and freedom to present information. However, when using a combination of hierarchical and linear organisation, readers can easily lose their mental position in the hierarchy when crossing hierarchical boundaries by moving forward or backward. As a result, links back to the top levels were provided so that readers can get back to some known position quickly and easily. The design of the home page and art gallery pages are shown below:


Edo Culture Home Page - Microsoft Internet Explorer
File Edit View Go Favorites Help
Back Forward Stop Refresh Home Search Favorites History Channels Fullscreen Mail
ADDRESS C:\nosaprojframes\ben\index.html
LINKS
WELCOME TO BENIN
Cradle of Black Civilization
English Version Edo Version
Done
My Computer



Stages Involved in Developing the Bini Website

Stage 1: As with every web site development, the first stage usually involves deciding on what subject or organisation to build the web site on and the possible area which the web site will cover. In this case, a few aspects of the culture were selected, since building an in-depth web site of the entire culture would be near impossible given the time and financial constraints.

Stage 2: Having chosen a subject, the second stage was deciding on the scope of the work. This involved identifying and documenting the specific aspects of the culture that would be covered, i.e. the content of the site. A little diagrammatic representation showing the major subject and the sub-topics to be covered served as a useful guide.

Stage 3: Having decided upon the content of the site, the next stage was gathering information on the various sub-topics identified in the preceding stage. Information for the site was in textual, pictorial and audio and video forms. Textual information was obtained from desk research, interviews and observation. Pictorial information was obtained by the use of cameras. For pictorial information, a good camera with a zoom lens was used and the pictures were printed in the 5 by 7 inches size. For audio

and video information, pre-recorded audio and videotapes were obtained from recording studios and some were created manually by using a tape recorder.

Stage 4: The fourth stage involved the translation of the information already gathered into formats suitable for the web. Pictures were scanned and saved in JPEG (Joint Photographic Experts Group) formats, since JPEG formats are the preferred formats for photographic pictures. Other images such as drawings and paintings can be scanned and saved as GIF (Graphical Interchange Formats). Audio sounds were converted and edited using a microphone attached to the computer and the software "Microsoft Sound Recorder. (Available in the windows operating system). Video on the web is still a relatively new concept and could be problematic. Equipment and software programs for converting video into web formats (AVI, QT, and MPEG) were not readily available, therefore video files were no longer included.

The entire information was then organised into a web site using the HTML (Hyper Text Mark-up Language), JavaScript, and Java applets. The development environment used was the notepad and initial testing was done on a stand alone Pentium 233 system using the Internet Explorer and the Netscape Navigator browsers respectively.

It is important to note, however; that to ease web development, web applications packages such as Macromedia's Dreamweaver, Dreamweaver ultradev, FrontPage express etc can be used. These help to eliminate the rigours involved in learning HTML codes and Java programming.

Stage 5: The final stage in the web site development involved publishing the site on the Internet. This can be easily achieved by registering and obtaining a free web space or buying one from any of the free hosting services on the Internet, such as geocities, freeservers.com. Then FTP (File Transfer Protocol) programs such as ws-ftp, cute-ftp, etc, can also be obtained from the Internet and used to transfer the site from the remote computer where it is located to the web space that has been obtained for it.
This web site on Bini culture can be viewed at http://www.great-benin.8m.net.

Usability Test

Usability tests were also carried out to determine the usability of the site. A usable interface is one that is (1) easy to learn (2) efficient to use (3) easy to remember (4) causes few errors and (5) it is pleasant to use. Usability goes beyond mere user-friendliness. At its core, usability is rooted in cognitive science. Web usability studies focus on how well users think about a site, figure out how to interact with it and retain information essential to its operation (Allison, 1999). It deals with how the site conveys the author's message, what the user's emotional reaction is to the site and how well users can find their way on the site.

There are basically two approaches to carrying out a usability test. These are the informal and the formal approach. The formal approach comes from classical and scientific methods using experimentation. It involves developing formal hypothesis and statistical testing and verifying them with randomly selected samples. The informal approach which is being increasingly applied in web circles relies on collecting qualitative information about how users interact with the site when they are given a series of task to perform. According to Fichter and Cervone (2000), a simple but effective evaluation technique of a web site is to ask people to rate a page. By rating a page based on some criteria, users help to point out the strengths and weaknesses in a design. What helps make informal testing popular is that the testing methods are easy to learn and apply. Although the methods are basic, they are capable of turning out valuable findings about whether a site is usable or not (Alison, 1999). Following from these, an informal approach using an evaluation form was used to test this site.

User Population

In carrying out the usability test, a cross - section of people were selected from information science professionals, indigenes (Binis) and a couple of foreigners from Cameroon and Ghana.

As was earlier said, in an informal approach to usability testing, no classical scientific method using experimentation or development of formal hypothesis and statistical testing is required. Rather, it relies on collecting qualitative information about how users interact with the site when they are given a series of task to complete. Thus, the user population for the test was not divided into groups using a sampling method. Rather, users were selected at random, but with the underlying criteria that they were qualified enough to be relied upon to give accurate judgements on the effectiveness, affectiveness and navigational efficiency of the site, three factors considered necessary in measuring a usable site. *Effectiveness* is how well the site conveys the author's message, *affectivness* is the user's emotional reaction to the site and *navigational efficiency* is how well users can find information on the site.

It is important here to note, that in carrying out a usability test, care must be taken to ensure that the questions and tasks given to users, adequately address these factors and criteria of a good or usable site.

User Groups

Information science professionals: This group comprised web site designers, computer scientists, librarians and graduates from communication and language arts. The idea behind selecting this group was to have a set of people who could rate the site not just on its aesthetic appeal but also in terms of its technical strengths and deficiencies, design structures and navigational efficiency.

Binis (Indigenes): This group which comprised an elder, a scholar and a couple of students from different disciplines were chosen in order to have a set of people who were familiar with the culture and could authenticate some of the information presented on the site. This group also contributed in rating the information content of the site, particularly in terms of its depth of coverage.

Foreigners: Since the general idea about the site was to promote African culture, and not necessarily a Nigerian culture, it was deemed fit to also know the views of other Africans. As such, a Cameroonian and a Ghanaian also contributed in the test. This could very well serve as a challenge for them to place indigenous African content on the web.

Findings

All the respondents used were graduates in their various disciplines. Some were doctoral students, a few were lecturers, others were workers in the information technology and government sectors, including a senior officer from the Nigerian ministry of foreign affairs.

Majority of the respondents rated the site highly in terms of navigation, location of information and aesthetic appeal, consistency and ease of understanding of the website and information content.

Conclusion

The World Wide Web is a fast growing area of the Internet. After only about a decade of its existence it has grown to become one of the most widely used resources on the Internet. It is fast becoming the easiest and cheapest means of communicating and publishing information over distance and to a wide audience. It thus provides an efficient medium for promoting ideas and a veritable tool for influencing opinions in the society.

In the evolving information age, the Internet is an information medium that must not be missed by developing nations and by Africa in particular. Apart from being a rich source of scientific and social information, it also lends itself as an avenue through which Africa can promote its culture and ensure the continued existence of her rich cultural heritage.

As has been said, culture is not merely a return to the beliefs and customs of the past, it is the totality of the way of life evolved by a group of people in their attempt to meet the challenges of daily living in their environment. As Aig-Imokhuede (1992) put it, "when we talk about self reliance national identity and sustainability as the core of our national development objective, we are referring to culture as the fountain

spring of all policies, be it educational, economical, social, and political." An understanding therefore of the culture of societies could very well be the panacea for peaceful co-existence among nations and groups of people.

In this work, one has tried to portray and promote the rich cultural heritage of the Binis in African society. It is not a complete cultural history of the Binis, as theirs was a civilisation that has spanned almost a thousand years.

This work, apart from promoting African culture is also an attempt to increase the African information content on the information superhighway which recent World Bank Reports placed at 0.4%. This report stresses the great challenge for African information professionals to increase Africa's content on the Internet. Of the 0.4% generated by Africa, South Africa generates 0.38%, thus leaving the rest of Africa contributing only 0.02% to the global content of information on the Internet.

Clearly, this study is but a little effort at increasing Africa's percentage of global content. However, it is hoped that it will serve as a challenge to other African information professionals to place more indigenous content on the Internet and perhaps one day strike a balance between the indigenous and foreign content. This could very well help in achieving a total globalisation rather than one that is skewed in favour of the more developed nations.

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Applications of Digital Libraries and Electronic Technologies in Uganda

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Abstract

The paper analyses the corroborative applications offered by different organisations in Uganda and describes prospects for the use of digital libraries in Uganda. A qualitative approach design with a purposive sampling strategy was adopted. The study was limited to practical experiences on the services and applications. The results indicated that a majority of organisations apply information and communications technologies (ICT) in bridging access across networks and sharing of information between different organisations. It was observed that the current information and communications technology systems in Uganda do not reach majority of users. It was concluded that education and knowledge on the use and adaptation of digital libraries and electronic technologies will contribute effectively to collaborative applications in Uganda. It recommends services that need to be integrated into the organisations' strategic objectives.

Introduction

A digital library is an automated or electronic library. It derives its name from the term *digital*, a representation of data or information in a combination of separate groups of digits suitable for processing by computers (*Harrod's Librarians Glossary*, 1995). It has been associated with terms like electronic publishing, electronic data processing, electronic bulletin boards, electronic document delivery, electronic journal and electronic book. It offers activities like accessing, retrieval, processing, automatic indexing and textual analysis.

A digital library can be understood as an information centre without a physical location for the end user. The user can access a digital library from anywhere and information can be

held anywhere. This is enabled by the use of computers and telecommunication systems. A digital library offers facilities for accessing collections of automated libraries on-line.

Digital libraries have become a common feature in the information landscape in developed countries. With time, however, it has also gained ground in advancing communications, information and knowledge in the developing world. The major concern of digital libraries is how to adopt these technologies to meet the needs of the developing world. Reliable digital libraries do not exist as a single entity; they require technology to link their resources. The collection of these digital libraries is not limited to surrogate development but extends further to digital artefacts that cannot be represented or distributed in printed formats. The linkages between the many digital libraries and information services to the end users need to be exploited. Digital libraries have enhanced a shift in the use and development of electronic content

The emergence of the world wide web (WWW) is perhaps the greatest manifestation of shift in the use and development of digital libraries and electronic technologies. It has enhanced scholarly communication, a rise in computational science, the new role of databases, shared cataloguing, computer networking for collaborative relationship within the library community, online public access, abstracting and indexing schemes. Teague (1985) deems this phenomenon to have influenced the investments in publishing and library automation.

The existence of co-operation offered by digital libraries in Uganda does not go beyond experimental level. However, the existence of databases, library online catalogues and electronic journals in different organisations constitutes what is sometimes called a digital library. For the purpose of this paper, digital libraries will be defined in Uganda's context as those libraries that are greatly aided by networks access to electronic databases, online public access catalogue, and to some extent the provision of e-mail and Internet services to the users.

The main objective of this paper is to find out the practical applications of digital libraries and electronic technologies in the services offered by professional associations, non-governmental organisations (NGOs), government departments, international organisations and academic institutions in Uganda.

Methodology

Data used in this study were collected from academic institutions, NGOs, professional associations, international organisations and the government sector. Only those institutions that used computers in the management and operations of their information handling activities were considered for this study. Multiple methods were employed to collect data. Different organisations were visited and interviews were conducted on the different services provided. Document review was

done from the existing literature. In order to establish the practical application of digital and electronic technologies in Uganda, the organisations were categorised as professional, NGOs, international, academic and government departments. In all, 34 institutions were surveyed- eight professional associations, six NGO's, six International organisations, six government departments and eight academic organisations were selected. The sampling strategy was based on purposive sampling from identified individuals in selected organisations who would represent the views of the organisation in areas of digitalisation and electronic technology. Interview and observations techniques were the data collection methods used.

Analysis

Background Information of the Organisations

The data were first presented according to each type of organisation and practical applications and experiences reflected. Data were later analysed for the services offered by the various organisation types. Both tables and verbal descriptions were used in the presentation and analysis of the results of study. The services offered in different organisations were observed in order to collect the statistics of the practical experiences of different organisations. The practical applications based on these services were analysed to provide a basis for the conclusion of the study. Data were presented according to the services that facilitate the use of digital libraries.

Professional Associations

A professional is a person who belongs to one of the learned or skilled profession such as librarians, lawyers, farmers, environmentalists, and medical doctors and teachers. The professional associations are those associations formed by people in specified fields.

Data on how the professional associations have promoted digital libraries and electronic technologies were collected. The data collected shows that digital libraries facilitate information sharing, knowledge and communication among the professionals. Different organisations were requested to identify the services they offered and indicate the collaborative application. The majority of the associations applied information technologies in bridging the information gap between distant and disadvantaged communities. This was facilitated through repackaging of information. Electronic resource across the networks is a common feature in most organisations which received assistance from donors. The local organisations have effectively utilised the technologies in communications using email and associated technologies like the fax and telephone to distant communities.

Non -Governmental Organisations (NGOs)

Non-Governmental Organisations (NGOs) are non-profit organisations registered by government currently under the Ministry of Internal Affairs. These include national and community-based organisations (CBOs). A number of NGOs were visited to find out how information technology was applied.

A majority of the NGOs utilised information technologies for information sharing among institutions that share the same objectives. Bridging access to distant disadvantaged communities is associated with civil NGO's. Repackaging of information was found to be common among NGOs with the use of radios, telephones, television, and notice boards, holding meetings, posters and drama. This has supplemented their means of utilisation of digital information. The majority of NGOs associate themselves with digital libraries and information technologies for matters of effective delivery of their services. Most of the services offered were based on the use and utilisation of the Internet.

Government Departments

Government supports ministries and other semi-autonomous organisations by allocating a vote from the national budget to them. Sharing of information among the institutions was mostly experienced among the governmental organisations. The Internet has enhanced communication and resource sharing among the communities. The online retrieval services and CD-ROM searching were the most utilised in the use of digital information. Most of the government organisations that utilised information technologies got integrated projects into the government national plan and objectives.

International Organisations

There are several networks set up by international organisations to disseminate and enable the sharing of information and resources. A number of international organisations were visited to find out how they embraced the use of digital libraries and information technology in the execution of their services. A majority of the international organisations have applied digital libraries in the transfer of information across networks. It facilitates bridging access to information to distant and disadvantaged communities. Mutula (2002) acknowledges this as playing an important role in the development and implementation of Indigenous Knowledge systems (IKSs). He attributed this to the Internet and WWW that have contributed significantly to the promotion of Indigenous Knowledge (IK). Enhancement of communication between the communities was also characterised in the international organisations.

Academic Institutions

Academic Institutions are basically responsible for teaching, education and research. Examples of these institutions are universities, institutions of higher learning and training institutions. The research function is the most practical collaborative application of the

majority of the academic institutions. This has been achieved through sharing of information across the networks and availability of databases which have enabled access and online use of information offered by many organisations. This is mostly to enhance knowledge among the communities in respective institutions. Some observations were made on the electronic theses. The alternative services offered manually that await digitalisation in academic institutions are: reference services, interlibrary loans, bibliographic references, translation and archiving information. One professor found searching the Internet at the Makerere University Library said: "Makerere University academic researchers have to put these technologies to use to carry out extensive research."

Services Offered by the Organisations

The services offered in the various organisations and their practical applications are presented in this section. The study aimed at finding out the extent to which the services of digital libraries have been offered in the various organisations sampled in the study. It was also intended to establish the situation of the practical applications of the services offered by digital libraries in Uganda.

Digital Libraries and Information Technologies

A number of services offered by digital libraries and information technologies in various organisations were established. In the 34 institutions contacted, the result showed diversity of services offered at different levels. Table 1 shows the services offered by the different organisations.

Table 1: Services Offered by Digital Libraries in Various Organisations N=34

SERVICES	Number of Organisations Offering the Service						
	Professional Total = 8	NGOs Total = 6	International Total = 6	Government Total = 6	Academic Total = 8	Total 34	%
Resource Sharing	4 (50%)	4 (66.7%)	4 (66.7%)	1 (16.6%)	3 (37.5%)	16	47.1
Digitising Information	2 (25%)	1 (16.6%)	1 (16..6%)	1 (16.6%)	1 (12.5%)	6	17.6
Online Public Access Catalogue (OPAC)	2 (25%)	4 (66.7%)	1 (16..6%)	0	5 (62.5%)	12	35.3
Information services	1 (12.5%)	2 (33.3%)	1 (16..6%)	1 (16.6%)	4 (50%)	8	23.5
Ordering and Acquisition of Information	2 (25%)	0	0	4 (66.7%)	3 (37.5%)	9	26.5
Database Management	2 (25%)	1 (16.6%)	1 (16..6%)	3 (50%)	2 (25%)	9	26.5
Publishing on the web site	4 (50%)	4 (66.7%)	4 (66.7%)	5 (83.3)	5 (62.5%)	22	64.7
Storage of Information	2 (25%)	1 (16.6%)	3 (50%)	1 (16.6%)	5 (62.5%)	12	35.3
Information analysis and design	2 (25%)	1 (16.6%)	1 (16.6%)	1 (16.6%)	4 (50%)	9	26.5
Networking	4 50%)	0	4 (66.7%)	1 (16..6%)	0	9	26.5
Selective Dissemination of Information	0	3 (50%)	1 (16..6%)	1 (16..6%)	4 (50%)	9	26.5
Advisory services	0	3 (37.5%)	1 (16..6%)	1 (16.6%)	4 (50%)	9	26.5
Bibliographic Services	0	1 (16..6%)	2 (33..3%)	1 (16.6%)	4 (50%)	8	23.5
Lending and Borrowing	0	1 (16.6%)	2 (33.3%)	1 (16.6%)	3 (37.5%)	7	20.6
Online services and searching	3 (37.5%)	1 (16.6%)	3 (50%)	2 (33.3%)	4 (50%)	13	38.2
Abstracting and Indexing	0	1 (16..%)	0	0	6 (75%)	7	20.6
Web site Management	3 (37.5%)	3 (50%)	2 (33.3%)	2 (33.3%)	3 (37.5%)	13	38.2
E-commerce	0	0	0	1 (16.6%)	2 (25%)	3	8.8
Union catalogue	1 (12.5%)	0	0	0	1(12.5%)	2	5.9
Distance Education	0	0	0	1 (16.6%)	4 (50%)	4	11.8
Telenetting	0	0	0	0	1 (12.5%)	1	2.9

The table above shows that academic institutions had more emphasis on abstracting and indexing services (75%); storage of information (62.5%), (OPAC) (62.5%) and publishing on the web site (62.5% each). Information services, information analysis and design, selective dissemination of information, advisory services, bibliographic services, online services and searches and distance education generally appeared to be commonly offered by the academic institutions. However, academic institutions seemed to have litt'e networking collaborative ventures in the country. Government institutions utilised electronic technologies in hosting publications on the web site. Networking, publishing on the web sites and resource sharing were common features for both professional and international organisations with 50% and 66.7% respectively.

Generally majority of the organisations published on their web sites (64.7%) as one of the services most offered by electronic technology. This is due to the fact that it is easy, since any service provider can host it. Publishing on the web sites, resource sharing and online public access were the services most offered by digital libraries in the majority of the organisations. Tele-netting, e-commerce, and union catalogue were the services least offered by digital libraries.

Practical Applications of Digital Libraries in Uganda

Some of the practical applications for the ideal system of the digital libraries would include among others: facilitating the exchange of information and resources, offering co-operative projects to avoid duplication of efforts and bridging access to information to distant and disadvantaged communities. In order to find out the practical applications offered by different services in the organisations, data were coded according to the common practical applications areas. Table 2 shows practical applications of digital libraries in Uganda. The analysis of the table is based on both individual organisations and total observations.

Majority of the organisations had applied digital libraries in the development of electronic resources across networks (79.4%), in sharing of resources between information institutions providers (76.5%) and enhancement of communications within the communities (73.5%). To a lesser extent, digital libraries have facilitated bridging access to information to distant and disadvantaged communities (67.6%) and enhancement of research among users (55.9%). Out of eight academic institutions, all (100%) had succeeded in the enhancement of research among users, enhancement of knowledge among communities (87.5%). Enhancing communication, bridging access to information to distant and disadvantaged communities and sharing of resources between information institutions and providers ranked best (100%) for professional associations. Apart from international organisations (66.7%), enabling standards and controls among institutions ranked among the least as an

Table 2: Practical Applications of Digital Libraries

Application	Observations						
	Prof. (8)	NGO (6)	Govt (6)	Inter (6)	Acad (8)	Total (34) No.	%
Development of electronic sources	5 (62.5%)	5 (83.3%)	6 (100%)	6 (100%)	5(62.5%)	27	79.4
Sharing of resources	8 (100%)	4 (66.7%)	4 (66.7%)	4 (66.7%)	6(75%)	26	76.5
Enhancement of communication	8 (100%)	2 (33.3%)	3 (50%)	6 (100%)	6(75%)	25	73.5
Bridging access to information	8 (100%)	6 (100%)	2 (33.3%)	6 (100%)	2 (25%)	23	67.6
Enhancement of research	2 (25%)	3 (50%)	3 (50%)	3 (50%)	8(100%)	19	55.9
Enhancement of knowledge	2 (25%)	4 (66.7%)	1 (16.6%)	2 (33.3%)	7 (87.5%)	16.	47.1
Facilitate Education	5 (62.5%)	1 (16.6%)	1 (16.6%)	2 (33.3%)	6(75%)	15	44.1
Increased access to information	2 (25%)	1 (16.6%)	1 (16.6%)	4 (66.7%)	6(75%)	14	41. 2
Co-operative projects	2 (25%)	2 (33.3%)	3 (50%)	4 (66.7%)	2 (25%)	13	38.2
standardization	1 (12.5%)	2 (33.3%)	1 (16.6%)	4 (66.7%)	3 (37.5%)	11	32.4

application for the services offered by majority of the organisations (32.4%). Except for academic institutions (75%) and professional associations (62.5%), digital libraries generally seemed not to have facilitated education (44.1%) in the application of the services offered by various organisations. This has limited promotion of co-operative projects to avoid duplication of efforts (38.2%). Inadequate education has also limited effective access and retrieval of information (41.2%).

Discussion

The findings in both tables 1 and 2 indicate some attempts in the application of digital libraries and Information technologies in Uganda. However, there are still a number of factors that limit this development. The satellite time and Internet access, costs of being connected, and the band width are some of the factors limiting the co-operative applications. Uganda's power supply is unreliable in most parts of the country and almost non-existent in rural communities. High telephone bills have been experienced by majority

of the organisations, network breakdown and lack of control over the internet service providers (ISP) being the hosts of the web sites have limited the effective utilisation of digital libraries in Uganda. The Uganda National Council of Science and Technology (2001) has proposed a national information and technology policy. The policy enhances collaboration and co-ordination at the local and regional level. However, the policy framework identifies some emerging issues that need to be addressed.' These include the need for better co-ordination of training in the country, and identifying and publicising the existing application of ICTs in the country. The policy bases its strategies on the Uganda Vision 2025 that targets at developing a literate and informed society.

The low usage of digital libraries is also facilitated by the high monthly subscription fees to the ISP and market uncertainty for those engaged in e-commerce. Morales (1998) supports this observation that "the cost of a computer, telephone, fax, and other related technologies is 5-10 times higher in developing countries than in developed countries." He stresses the cost-factors that facilitate accessibility and use of these technologies. Databases on CD-ROM are less utilised due to the technology involved in their production. Literacy levels in the country contribute to poor utilisation of ICTs in the country. It is obvious that in over 80% of the rural areas, there are a few telephone services that would facilitate the use of digital libraries. However, this is being tackled through the repackaging of information to be transmitted on television, radios and print media to the disadvantaged groups.

Conclusion

The findings indicate that digital libraries and electronic technologies have contributed effectively in collaborative applications between institutions. They have also contributed to the development of electronic resources across networks. Sharing of resources between information users and providers has provided the basis for effective utilisation of digital library services. Digital libraries and electronic technologies have facilitated communication among the institutions. This has facilitated the bridging access to information in distant and disadvantaged communities in the country. This is not possible without building an informed society in the use and utilisation of digital libraries and Internet facilities.

The services of digital libraries and electronic technologies need to be integrated into the organisational strategies. In Uganda, literacy levels and attitudes of various communities affect the adoption of ICT into their organisational plans. Integrating the use of ICT into the educational system in the country can facilitate this. A policy and regulatory environment for effective delivery of ICT services in Uganda is a priority. Organisations need to put in place an ICT master plan and ICT policy to enable the effective delivery of services. The marketing of services and making information available to enable awareness of the collaborators' activities is paramount in the use of digital libraries. Without knowledge and skill base on the use of ICT in the country, the adaptation and use of digital libraries in Uganda will be limited.

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Records Management and Preservation in Government Ministries and Departments in Ghana

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Abstract

There is the erroneous notion among records managers in the public sector and the business setting that preservation of records is an activity reserved for the conservator late in the life of the document. In order to find out the care and handling of records in Government ministries and departments, 69 registries were surveyed. A questionnaire was designed to collect information from the surveyed ministries. Fort- four or (64%) responses were received. The analysis reveals that the degradation of records begin in registries in which most records spend their active life. Also, a majority of records which end up in the archives are at various stages of deterioration before reaching their destinations. The article concludes that preservation is an activity that runs through the total life of records must form an integral part records management.

Introduction

In institutions all over the world, preservation is regarded as an activity that is the exclusive responsibility of a conservation unit of an archival institution. It is always an uphill task trying to convince records managers in the public sector and those in the business setting that the quality of management given documents at the early stages of their life and indeed throughout the life cycle ultimately influences their longevity. Cameron (1991) argues that the most cost-effective and efficient way of securing records for the future (archives) is to ensure that they are captured on as durable materials as possible.

Akotia (1997) reported that until the early 1990s, the Government of Ghana had lingered on with a records system inherited from the colonial civil service structure. This inherited system of managing public sector records operated with a rigid division between records management and archives administration, with the National Archives focusing its attention only on the tail phase of the record's life cycle. This

had proved restrictive and unproductive as revealed by the series of workshops and restructuring which went on prior to the promulgation of the Public Records and Archives Administration Act (Act 535 1997). The promulgation of Act 535 gave birth to the Public Records and Archives Department (PRAAD). This ended the dichotomy between records management and archives administration as framework for managing public sector documents.

Eden and Feather (1997) arrived at the conclusion after a survey of preservation policies and strategies in British Archives and Record Offices that preservation is a cord that runs through all the activities of an archive or record office. As mentioned earlier, preservation is perceived by many as belonging to the domain of the conservator in the archival institution and not the records manager in the registry, or the records centre. This perception, Lusenet and Drenth (1999) argue is negative, and does not give the records of today the chance to graduate into the archives and for that matter heritage of tomorrow.

Cameron (1991) insists that to secure records for the future, they must not only be created on durable materials but they must be stored in conditions which match British standard (BS) 4783, 5454 and 5699 and International Standards Organization (ISO) 5466 and 6051. In Ghana, there is hardly any compliance with standards when it comes to document creation and storage. Materials of any quality are used with very little control of the storage environment. Documents are scattered in any available space without due reference to suitability. The handling and care of public documents in the ministries go on with very little tact.

The article discusses the results of a survey of care and handling of records in the ministries and departments of Ghana, and the implications for long-term preservation in the National Archives.

Methodology

A survey of the registries of 69 government ministries and departments was carried out. A questionnaire was designed for the purpose of collecting relevant data from the registries. In order too carry out the study the country was partitioned into three sectors – the northern sector comprising the Upper East, Upper West and Northern Regions; the middle sector comprising the Brong Ahafo, Ashanti and Eastern Regions and the southern sector comprising the Greater Accra, Volta, Western and Central Regions. One Region was selected from each sector based on the level of cosmopolitan activity to constitute the subjects of the sample. The selected regions were the Greater Accra Region from the southern sector, the Ashanti Region from the middle sector and the Northern Region from the northern sector.

In Ghana, there are many ministries and departments serving the public. Some of them have decentralised their activities by establishing regional branches in the

regional capitals while others are yet to do so. For this study, twenty-three ministries and departments common to the three selected regions were selected to constitute the sample for the survey. (see appendix 1). Records Officers of the registries of the selected ministries and departments in the three regional capitals were identified and served with the questionnaire. Information was collected on policies, procedures and activities relating to the care and handling of records. The data collection took place between the months of July and December 2001. In all, 69 registries were served with the questionnaire. A total of 44 registries returned the questionnaire giving a response rate of 64%. Out of this number, 40.9% were centralised registries, 56.8% were decentralised registries with 2.3% not indicating the type of registry. Most of these registries were open registries, hence they are open to use by a large number of staff.

Analysis and Discussion of Data

Building and Equipment

Twenty seven of the registries or (61.4%) had customised buildings, while 34.1% of the registries occupied their buildings with other departments. There were no indications from two of the registries. In addition 36.4% registries indicated their buildings were regularly maintained whereas, 56.8% had no maintenance schedules, with 3 (6.8%) giving no indications. Follow-ups to some of the responding registries confirmed that most of them had been in state of disrepair for long periods with exposed electrical wirings, cracked and dirty walls and dilapidated equipment. Only 25%) had air-conditioning facilities; fire detectors (9%) and with fire extinguishers (25%), most of which had not been refilled for years. Under such circumstances, the ease with which public records could be lost to fire disasters and water damage from rainstorm is very high. Indeed, some public records had suffered these fates. The most recent was in 2000 when high - level policy documents were damaged by flood at the Office of the President and the National Archives was called to the rescue. Some of the documents were lost.

Storage Equipment

Storage facilities serve the purpose of protecting documents and ensuring the ease of storage and retrieval of records. According to Krevolin (1986), the storage equipment an office selects for use depends largely on factors such as the type of documents to be stored, office layout, floor space available and the cost. Most of the registries surveyed were using some standard equipment to hold their records. Some registries (45.5%) were using wooden shelves; metal shelves (9%); steel drawer cabinets (54.5%) and wooden cabinets (22.7%). Drawer cabinets, even though not cost – effective as far as space utilisation is concerned, secure and protect records against theft, physical damage from humans, animals and insects and above all, against some of the vagaries of the environment such as dust, and other forms of pollution.

Open shelves, on the contrary, have higher capacity storage facilities and yet do not afford the security and protection unless other supplementary supplies such as boxes and wrappers are used. The survey revealed that only 50% of the 20 registries using wooden shelves used boxes or wrappers to enhance protection. This situation calls for some concern, particularly within the context of the dusty, insect and rodent infested environment in which the registries were situated. With such exposure, deterioration insidiously begins within the document and thereby reducing its longevity as it travels through the phases of the life-cycle.

Document Management and Care

Rosenberg (1993) has a strong conviction that everyday care of library books should be given a special emphasis in preservation measures taken by African libraries. This conviction is derived from the fact that the quality of care and handling ultimately contributes to the longevity of the book. This assertion, it is believed goes for the care and handling of records in registries in Africa and in Ghana as well. The survey conducted in the registries of the selected ministries revealed much about how public records were handled.

Current Records

The findings reveal that majority of the registries (80%) surveyed stored paper files, while 13.6% stored plans and maps; 9% stored bound volumes and only 6.8% stored records in electronic format. Not surprisingly, only an insignificant number of registries knew the source of paper used to create their records. Out of the of 44 registries, only 13.6% knew the source whilst 77.3% were unaware of the sources of paper. From observation and follow-up interviews, it became clear that papers used in the ministries were supplied by local contractors who own stationery shops. All the reams of paper inspected in some of the selected ministries had no indications of P^H values (the P^H value of paper, simply put, is the degree of acidity or alkalinity of the paper).

This points to an indiscriminate purchasing of paper for use in the ministries irrespective of quality, with the resultant implications for documents created on those papers, and their long-term preservation as national heritage. With the promulgation of Act 535, one would have expected that the Director of PRAAD deriving his powers from part II subsection seven (7) of the Act will establish standards regarding document creation, care and handling in the ministries, but that had not been the case, as revealed by the survey. Only 6.8% of the surveyed registries thought there were some standards relating to records management whilst 81.8% were not aware of any standards, with 11.4% not responding. Further interviews with the three who felt that there were some standards revealed that they were referring to the new registry procedure manual that had been put in place during the reform period.

The survey also tried to investigate how files were held together for use and storage. It is conventional that fasteners are used in offices to hold together records that constitute files in protectors to facilitate their use and storage. Fasteners are usually selected depending upon the climatic environment and the retention period of the file. Files meant for "permanent" retention need to be held together with fasteners that will not ultimately facilitate deterioration of the file. The results of the survey were not surprising because Ghana had stuck to British Colonial traditions for a long time as far as records management is concerned. All used treasury tags, metal clips and office pins. Only 7.1% used plastic clips in addition. It is obvious that apart from the plastic clips, all the other fasteners in use will, with time, rust and stain the documents given the humid climatic conditions. Most of these are not removed before the documents are transferred to the National Archives. No wonder, a majority of the colonial files in the National Archives of Ghana are rust-stained with ruptured treasury tags and falling pins and clips. This again points to the absence of guidelines and standards to be complied with by the records officers in the registries of the ministries, the records centre and probably the archives.

Semi-Current Records

Summarising the problems faced by semi-current records in Ghana prior to the outset of the records reform programme, Akussah (1990) wrote that "Most inactive records have been left haphazardly unbound and dispersed in obscure store rooms under staircases and in file cabinets (most often with misplaced keys) of separate government departments." With the establishment of the National Records Centre and the restructuring exercise, the situation seems to have improved in the area of decongestion and the regular transfer of documents. However, before the closed files are transferred to the National Records Centre, they need to be stored in the registry for sometime.

The survey sought to find out how closed files were handled in the registries prior to their transfer to the records centre. When the respondents were asked if the closed files were stored in any organised manner, majority (72.7%) answered in the affirmative while 22.7% answered they did not. In addition, 65.9 % registries stored them in cupboards, and the remaining 34.1% stored them in store rooms. Temporarily, 34.1% of the registries stored closed files on top of cabinets before sending them to either the cupboards or the store rooms. Follow-up observations revealed a rather clumsy situation in some of the registries particularly in the store rooms where records were found competing with non-record materials such as bottles, lorry tyres, old typewriters, etc. Some of them were dusty, insect infested with evidence of the presence of rodents. Files in these store rooms were not well arranged and were most of the time forgotten and remembered only when there was a need for reference from them. This negligent approach exposes public semi-current records to agents of degradation very early in their lives making their long-term preservation an uphill task in the archives.

Storage Environment

As mentioned earlier, Cameron (1991) suggests that to be able to secure the archives of the future from today's records, records need to be stored in conditions that match BS 5454, BS 4783 and BS 5699. Failure to do this could result in the loss of vital or valuable documents in the registry or the records centre before they even qualify to become archives. Ideally, records are to be stored under controlled environmental conditions. Factors such as temperature, relative humidity, light intensity and illumination and atmospheric pollution need to be kept at acceptable levels. High levels and fluctuations should be curbed if not eliminated completely.

The survey sought to find out efforts made in the registries to monitor and control deteriorative factors in their storage environments. Actual levels of the factors were not taken due to the lack of equipment. The survey however yielded very interesting results. Out of the 44 registries only 18.2% monitored temperature by taking periodic readings, 6.8% monitored relative humidity and 6.8% monitored light intensity. None of the registries monitored pollution. This might be due to the fact that the equipment for monitoring pollution effectively is expensive. A follow-up observation confirmed that the few registries monitoring temperature and relative humidity were using air-conditioners which have facilities to measure the levels. The three registries that indicated that they monitored light were found not to be monitoring the levels of illumination and intensity but rather prevented excessive natural light from entering their storage areas. Monitoring the levels of climatic elements in the storage environment is a good thing but it is always better if the results of the monitoring guide the custodian as to how to control such elements in the environments. The survey revealed that only 11.4% of the 44 registries made use of the readings obtained from the monitoring of some of the environmental elements, which enabled them to control aspects of the storage environments. The remaining 39 registries or (88.6%) did not use the readings and therefore did not control elements in the storage environment.

This is a rather pathetic situation, given the geographical location of Ghana and the corresponding climatic and weather conditions experienced. The implication of this is that public records in the registries are constantly exposed to the vagaries of the climates such as high and fluctuating temperatures and relative humidity, excessive light intensity and illumination and to some extent polluted air. Registries located along the coastal belt such as Accra, Tema, Cape Coast and Takoradi suffer further from the saline effect of sea breeze whilst those in the hinterland and the northern regions (Kumasi, Sunyani, Tamale, Wa, etc.) suffer more from the effect of dust.

Research has shown that there is a definite correlation between the levels of temperature, relative humidity, and pollution on one hand and the rate of document deterioration on the other. Acidification of paper documents and biological activities are more intense at higher levels than lower levels. Equally dangerous is the cycling

or fluctuations in temperature and humidity. It is not surprising therefore that most of the registries surveyed cited high temperatures (84%), high relative humidity (84%) pollution (59%) and biological activities (68%) as the main sources of deterioration - related problems experienced. Thus, it is obvious then that before records move from the registries through the records centre to the archives some degree of degradation would have began however basic. It is possible that some records might not even have survived the onslaught at all.

Condition of Records

According to Ritzenthaler (1993), the state or the rate of deterioration of documents, particularly paper documents, is dependent upon the chemical stability of the materials making up the document and the external influences such as the environment, storage conditions and handling procedures. In addition, abuse and mismanagement as well as disasters, can also cause untold damage to documents.

The survey probed into the state of damage or deterioration of records in the registries and came out with the following interesting results. Out of the 44 responding registries, 61.4% reported observing damages resulting from the normal use of documents while 29.5% reported no observation. There were four registries that did not respond to the question. Probing further, it was realised that most of these damages related to mishandling and intensive use of the documents by action officers who hardly appreciated the value of documents beyond the information they need for their work. In response to a further question as to other causes of damage observed in the registries and inactive storage area, the following combination of factors and agents were mentioned by the respondents. These are: Mould (25%); Insects (95.4%) rodents (34%); fire (2.2%), water (2.2%), dust (52.2%); salinity (4.5%) and bad quality paper (27.2%). These results confirm the fear that deterioration of documents that end up in the National Archives as national heritage actually begins in the creating agencies where very little steps are taken to mitigate the vagaries of the environment. The problem becomes amplified when they congregate at the Archives with the varying states of damages given the limited resources of the archives system.

Preservation Awareness and Training

Ojo-Igbinoba (1993) in a study on the practice of conservation of library materials in Sub-Saharan Africa concluded that there was a lack of technical expertise and that librarians were not well informed about preservation and repair of library materials. This statement can be applied to the registry personnel in the ministry in Ghana, judging from the responses obtained from the survey in relation to preservation awareness and training. The survey sought to find out the level of awareness of preservation issues by asking questions relating to preservation training. It turned out that 77.3% of the registries had personnel that had some sort of training in preservation. The rest had no training at all. Out of the 34 respondents with some

training, none had formal training even though the former Department of Library and Archival Studies, (now Department of Information Studies) offers some formal instruction in preservation. All the 34 had some in-service training in preservation. The implication of this is that government ministries and departments are not benefiting from the products of the Department of Information Studies. This is not surprising at all since most of the products of the Department prefer employment with non-public institutions, like the banks, corporations, parastatals, etc. These organisations, as mentioned earlier, are more aware of the value of records management and are prepared to motivate professionals and para-professionals to remain and perform efficiently in their organisations.

This near absence of professionalism emanating from the lack of training results in reduced awareness, a major contributing factor to the rate of deterioration in the registries. This is reflected in the responses obtained to questions relating to routine disinfection and fumigation procedures. It was found out that only 50% of the registries periodically fumigated their inactive storage areas while the rest did not. The situation regarding preventive measures, specifically disaster preparedness was more alarming. Most of the registries (97.7%) did not have any idea about disaster preparedness. A follow-up interview with the records officer of the only registry that responded positively revealed that it had only a guideline of the "dos" and the "don'ts" in the registry. The situation paints a frightening picture particularly given the vulnerability of the Ghanaian society to some specific disasters. This is a pointer to the fact that some records might not survive at all to become archives.

Conclusion

It is evident from the discussion that the longevity of paper records depends upon the quality of paper, the quality of management and handling and the storage conditions both in the creating agencies and the archives. This calls for an integrated preservation programme that should form part of an overall records management policy involving the creators, users and custodians. Preservation should be seen as a thread running through the total life of the record and a responsibility of all and not only the conservator or the archivist.

Recommendations

The picture derived from the study is grave enough to make any policy maker shudder, realising the fact that records of today constitute the heritage of tomorrow. The old adage "catch them young" comes in handy and should be the key phrase for every policy maker, records manager, archivist and records user, in order to salvage the situation. In addition, the following recommendations will help mitigate the problems identified.

It is clear from the study that ministries and departments acquire paper for records creation from dubious sources without regard to their quality. The purchases are done by officers who are hardly aware of the types and qualities of paper and their implications for long-term preservation. It is recommended that within the framework of international standards, the Ghana Standards Board should set standards for the quality of paper and equipment as is the case in America, Britain, India, etc. There must be the insistence on the indication of P^H values on reams of paper on the market. All public institutions must be made to strictly comply with the set standards.

The study reveals that though there is a registry procedure manual which should serve as a guideline for public ministries and departments, but most of the respondents were not aware of it and those that were aware lack the clout to enforce the guidelines. Provisions in the Public Records and Archives Administration Act of 1997 mandate the Director of PRAAD to develop and implement sound records management policies and to institute standards and guidelines to be adhered to by government agencies. The Director has also been given the power to ensure compliance. In addition, the Act enjoins heads of public institutions to establish good records-keeping practices. The framework is clear. What is needed is a pragmatic and proactive approach to galvanise all heads of public institutions to see their records as national resource that must be managed. The Director of PRAAD should not hesitate to evoke sanctions to ensure compliance. The creation of a records class within the public service where all records officers in public institutions belong to PRAAD is a step in the right direction. This will make for uniformity as far as implementation of policies are concerned.

The study brought to the fore the fact that public records at the semi-current stage are the most vulnerable to degradation as a result of the little attention they receive. With the establishment of the National Records Centre, the problem should begin to ease. To achieve this, it is recommended that the Director of PRAAD should put together a process which will ensure a systematic and regular transfer of semi-current records from public offices to the National Records Centre for temporary storage. While this would decongest the registries, it would also compel PRAAD to get more involved in the life of public records earlier than it used to do, and the records would have received better care, and the incidence of losing public records before the archival stage would have been reduced.

The appalling environmental conditions could be improved if policy makers see public records as national resources and make adequate financial provisions for their care. The situation whereby public records management is considered as a "costly luxury" must be reversed. The Director of PRAAD needs to aggressively solicit for funds from the public treasury for the purpose.

Finally, PRAAD and the Department of Information Studies, University of Ghana, must embark on an awareness drive to sensitise public servants to good care and

handling of records. This is crucial since handling and care of records influence to a large extent their longevity. In addition, government should put in place an accelerated programme to recruit trained records personnel into public institutions, as they will have a better appreciation of preservation issues.

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Appendix

List of Ministries and Departments Sampled

Ministry of Education
Ministry of Justice
Ministry of Finance
Ministry Transport and Communication
Ministry of Trade
Information Services Department
Ministry of Youth and Sports
Ministry of Agriculture

Regional Administration
Ministry of Works and Housing
Immigration Department
Department of Births and Deaths
Ministry of Local Government
Ministry of Tourism
Commission of Culture
Accountant -General Department
Auditor- General Department
Ministry of Health
Ghana Education Services
Electoral Commission
Labour Department
Department of Parks and Gardens
Public Records and Archives Administration Department.

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African Journal of Library, Archives and Information Science as a Resource Base for Library and Information Science Research in Africa

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Abstract

The paper discusses the establishment of the African Journal of Library, Archives and Information Science (AJLAIS) in 1991 as a medium for African researchers in librarianship, archives, information science and other related information fields to disseminate their research findings. At the time the journal was launched, there was no continental journal for disseminating research findings, Rather, research findings by African researchers were scattered in moribund national journals or published outside the continent. The journal, having been published twice a year since 1991, has a sufficient resource base that could be evaluated. The objective of this paper was to appraise the journal, 1996-2000, as the main resource base for library and information science (LIS) research in Africa. The citations in AJLAIS and three other journals regularly used by LIS researchers in Africa (International Information Library Review, Information Development and Libri) were analysed. The citations were analysed with a view to identifying the frequency at which AJLAIS was consulted and used by researchers in Africa. The assumption of the study is that citation implies consultation and usage. Citations to the four journals during the period 1996- 2000 were analysed and compared. The findings reveal that AJLAIS has performed creditably as a resource base for LIS research in Africa.

Introduction

Dissemination of research findings is considered to be an important aspect of the research cycle because usually a research is not complete until it is disseminated widely to the scholarly and professional community. Like any profession, library and information science (LIS) requires vigorous research activity into the discipline in order for the profession to develop. Hence, research outlets, especially journals, used for the dissemination of research findings, abound in the profession.

LIS profession is a relatively new profession in Africa compared to the established professions of law and medicine. The profession was imported wholesale from the West during the colonial period. It has, however, gone a long way since the last century when it was first introduced into the continent. The pattern of development of the profession before the independence of most African nations and immediately after independence in the 1950s and 1960s was not very much different from what was obtainable in the West. It was not uncommon for many library associations to fund journals, which in turn reported research findings conducted in the different countries of Africa. However, by the 1970s and 1980s, most of the journals established by many library associations in African countries had become moribund. The national library associations and academic departments could not sustain their journals. Many of them ceased publication outright while only a few that were publishing, were several years behind schedule. Researchers in LIS were forced to report their research findings in journals published outside the continent. The implications of publishing abroad was succinctly put by Aina and Mabawonku (1996):

> The implications are clearly obvious as journals that are published outside Africa can only cover a limited portion of the research findings in Africa, and even those that cover Africa substantially are not widely available to local scholars. This is because the foreign exchange component involved in subscribing to the journals is very scarce in Africa, hence libraries are not able to place scholarly journals published abroad on subscription.

It became a serious issue that the International Federation of Library Associations (IFLA) had to organise a workshop for editors of library science journals in Africa on the survival of African library science journals under adverse conditions in 1992. According to Wise (1994), the principal objective was how to make African LIS journals sustainable.

In the late 1980s, there was not a single LIS journal in Africa that was coming out on schedule. It was therefore decided that something must be done to arrest the unfortunate situation, hence a decision was made to establish a continental-wide journal devoted to LIS research in Africa.

Background Information on the African Journal of Library, Archives and Information Science

The journal commenced publication in 199. Unlike other LIS journals, AJLAIS was established without any subvention from a library association or an academic institution. It was a radical departure from the norm. Thus, it was established mainly on a profit-making basis so that it could be sustainable. The idea was that a

journal professionally managed would attract enough subscription for its sustenance. A mission statement and a vision statement were drafted for the journal.

The mission statement reads:

> To provide on a regular and sustainable basis, an excellent scholarly journal that will provide a forum for librarians, documentalists, archivists and other information specialists, for reporting empirical research findings, studies on highly theoretical aspects of the various disciplines in the information profession, with emphasis on the Africa setting. The journal will serve as a gateway for the latest developments in the information profession all over the world and Africa in particular.

The vision statement is as follows:

> The journal is expected to be the major medium for reporting research findings in the information profession in Africa.

There is no doubt that the journal has been a success story since it was established. It has been regularly published on schedule since 1991, twice a year (April and October).

The full texts of all issues of the journal can be accessed on the Internet via the web site of H.W. Wilson Publishers, USA, by subscription. The web site is Http://www.hwwilson.com. Also, abstracts and table of contents (TOCs) of issues of AJLAIS can be accessed on the Internet. This is hosted by African Journals Online (AJOL) on its web site and it is maintained by the International Network for the Availability of Scientific Publications (INASP), UK. The address is http://www.inasp.org.uk/ajol/. AJLAIS is regularly indexed by *Information and Library Literature: and* abstracted by *Library and Information Science Abstracts, UK.* and *Information Science Abstracts, USA*

The importance of AJLAIS in the professional community has been highlighted by several scholars. Nkereuwem (1997) surveyed 200 librarians in Nigerian university and research institutes' libraries in order to measure the impact of LIS journals on the librarians; that is, LIS journals that were regularly consulted. AJLAIS was ranked second among the 26 LIS journals listed. In an evaluative study of the use of African–based journals in African universities, Alemna, Chifwepa and Rosenberg (2000) found that AJLAIS was the most regularly used LIS journal by respondents at the University of Ghana Library school.

In addition, AJLAIS has been the subject of investigation by some research workers. Alemna (1996; 2001) analysed contents of issues of the journal from 1991-1995 and 1996 - 2000 respectively. The analysis was carried out with respect to the status,

gender and geographic locations of the authors of papers in the journal, types of research reported in the journal as well as subject areas covered. Olorunisola and Akinboro (1998) carried out a bibliographic analysis of articles that appeared in AJLAIS between 1991 and 1997 by identifying the major subject areas covered n the journal. A comprehensive evaluation of the management of AJLAIS was also reported by Aina and Mabawonku (1996). The study analysed issues of the journal during its first five years according to editorial board decisions on manuscripts, country of origin of subscribers, types of subscribers, method of subscription. Thus, AJLAIS over the years has been regularly evaluated in one form or the other.

Methodology

In order to find out if the *African Journal of Library, Archives and Information Science (1991-)* could be considered as an important resource base for LIS research in Africa, citations to the journal and three others, namely *Information and International Library Review* (IILR) (1969-), *Information Development* (Infodev) (1985-) and *Libri (1951-,* were analysed and compared. While AJLAIS is published twice a year and devoted mainly to LIS research in Africa, the other three journals are published quarterly and cover LIS research in Africa substantially. It needs to be emphasised that only articles pertaining to LIS research in Africa published in the three journals were analysed. The other three journals are published outside the continent. All the LIS research papers published between 1996 and 2000 in the four journals were covered. These four journals : AJLAIS, IILR, Libri and Information Development constitute the source journals used for this study.

Many studies have revealed that the four source journals selected for this study are the most popular LIS journals in Africa. Nkereuwem (1997) ranked AJLAIS second, IILR (5th) and Libri (9th) as LIS journals regularly consulted by librarians in Nigeria, Aina and Mooko (1999) reported that 34 LIS top researchers in Africa ranked IILR (2nd) AJLAIS (3rd) and *Information Development* (8th) as top ranked journals regularly consulted by researchers on LIS research in Africa. In another study by Aina (1998), it was found that LIS researchers in Southern Africa regularly published their papers in 12 journals, which accounted for 70.7% of their research papers published between 1991 and 1994. *Information Development* and *AJLAIS* were ranked first and second respectively. Thus, the source journals selected for this study could be considered as representing the journals regularly used for LIS research in Africa.

The assumption of this study is that a researcher will cite an article if only it has been consulted and used for the research study being reported.

Findings

The analysis as shown in table 1 reveals that most African LIS research papers published between 1996 and 2000 by the four journals were published in AJLAIS. This is not surprising given the fact that it is devoted mainly to publishing African LIS research papers. It is significant that the other three journals contributed substantially, as they constituted 60% of all the papers published by the four journals. While AJLAIS is a major forum for publishing LIS research in Africa, this study has revealed that a large number of LIS research papers are still published outside the continent.

Table 1: Distribution of Papers Published on LIS Research in Africa, 1996-2000

Source Journal	Number of papers published	Proportion of papers published in the source journal (%)
AJLAIS	80	40.2
IILR	37	18.6
Libri	27	13.6
Infodev	55	27.6
Total	**199**	**100**

Table 2: Distribution of Papers Citing the Four LIS Journals

Source Journal	Number of papers published in source journal	Number of papers published citing the four source journals	Proportion of citing source journal (%)
AJLAIS	80	32	40.0
IILR	37	19	51.4
Libri	27	11	40.7
Infodev	55	28	50.9
Total	**199**	**90**	**45.2**

A sizeable number of papers published in these four journals (45.2 %) regularly cited one or more of the journals being investigated as shown in table 2. The results show an indication of the importance of the source journals as resource base for African LIS research.

A further analysis of the four source LIS journals shows that AJLAIS was the most cited among the four journals, as it constituted 36.5% of all the citations received by the four journals. This is closely followed by IILR (32.0%). Information Development was the least cited among the four journals (see table 3).

Tables 4a - 4d present citations from the four source journals to each of the source journal used for this study.

Table 3: Distribution of Citations to the Source Journals

Source Journal	Number of times cited	Proportion of citations (%)
AJLAIS	73	36.5
IILR	64	32.0
Libri	36	18.0
Infodev	27	13.5
Total	**199**	**100**

Table 4 a: Distribution of Citations in AJLAIS

Cited Source Journal	Number of times cited	Proportion of citations (%)
AJLAIS	29	39.7
IILR	12	16.4
Libri	19	26.0
Infodev	13	17.8
Total	**73**	**99.9**

Table 4 b: Distribution of Citations in IILR

Cited Source Journal	Number of times cited	Proportion of citations (%)
AJLAIS	22	34.4
IILR	19	29.7
Libri	12	18.8
Infodev	11	17.2
Total	**64**	**100.1**

Table 4 c: Distribution of Citations in Libri

Cited Source Journal	Number of times cited	Proportion of citations (%)
AJLAIS	8	22.2
IILR	8	22.2
Libri	4	11.1
Infodev	16	44.4
Total	**36**	**99.9**

Table 4 d: Distribution of Citations in Information Development

Cited Source Journal	Number of times cited	Proportion of citations (%)
AJLAIS	6	22.2
IILR	3	11.1
Libri	4	14.8
Infodev	14	51.9
Total	**27**	**100**

Table 4a shows that papers published in AJLAIS made twenty-nine citations to papers previously published in AJLAIS and has the highest number of citations, while Libri made 19 citations to AJLAIS. It is significant that as shown in table 4b AJLAIS was the most cited journal among the four journals in the papers published in IILR. Similarly, tables 4c and 4d reveal that AJLAIS was the second most cited among the four journals in papers published in Libri and Information Development. The pre-eminence of AJLAIS as a resource base for LIS research in Africa is very evident from these four tables.

Implications of the Findings

The implication of this finding is that LIS researchers regularly used AJLAIS for the research investigations much more than the other three journals which had been in existence several years before AJLAIS was established.

Based on the assumption that when an author consults other research papers for his/her study and goes on to cite such papers, it means the papers were useful to the author in his/her investigation. This presupposes that the journals in which the cited papers had been published could be considered as a resource base for research., AJLAIS could therefore be considered to be a major resource base for LIS research

in Africa. However, one of the problems of LIS research in Africa is the unavailability of relevant literature. Many research workers have indicated that most studies in their areas of research work are published by authors in other regions, hence in journals that are located outside the continent, especially in Europe and North America. Unfortunately most of the studies are generally suitable to the local environment of the authors in the other regions, hence it may not be widely applied to the situation in Africa. At the same time, international indexing and abstracting agencies do not cover many national journals published locally because they are irregular. When relevant African papers are published in journals based abroad, it is always difficult to have physical access to such journals, because of the enormity of the foreign exchange involved, which many libraries find difficult to pay. AJLAIS is therefore in a unique position to satisfy the research needs of LIS research workers in Africa. Apart from being regularly indexed and abstracted by international indexing and abstracting agencies, it is widely available since it is published locally. The subscription rate of AJLAIS is much lower than its peers. While the annual subscription rate of the African Journal of Library, Archives and Information Science is £50, the rates for its counterparts are: International Information and Library Review (£175), Information Development (£115), Libri (£130). Since the African journal of Library, Archives and information Science is published twice a year, the average cost of subscription per issue is £25. On the other hand, the other source journals that are published quarterly have the average cost of subscription per issue as follows: International Information and Library Review (£44), Information Development (£29), Libri (£32). Thus, it is economical for libraries in Africa and library, archives and information science training institutions in the UK and North America that have substantial African students to subscribe to AJLAIS. It is therefore not surprising that a large number of institutions in Europe, USA and Canada subscribe to AJLAIS.

Conclusion

This study has clearly shown that there is a need for a continental-based journal that will provide a medium for LIS researchers. This shows that there was indeed a vacuum at the time the journal was established. Thus, the journal has met the aspirations of its founders. However, for the journal to remain sustainable, there is a need to keep on promoting and marketing the journal so that its subscription base can be widened. If the journal goes the way of its predecessors in Africa, it will create an incalculable vacuum that will militate against LIS research in Africa. Also, the journal must maintain its high quality by ensuring that only peer reviewed papers are published in the journal. .

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Book Publishing Patterns in Uganda: Challenges and Prospects

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Abstract

This paper discusses the book publishing patterns in Uganda. The paper looks at the development of Uganda's book industry and assesses the factors that have impeded its growth. Current opportunities at the disposal of the industry are highlighted and the way forward outlined. Some of the factors identified as inhibiting publishing in Uganda are foreign policies, language barriers, economic status, high illiteracy rate, piracy, lack of government support, lack of national policy on book publishing, limited capital, lack of a virile national publishing association,etc. The paper also enumerates opportunities available for book publishing in Uganda,. This includes the establishment of the East African Book Development Council (EABDC), affiliation of the Uganda Publishers Association with African Publishers .Network (APNET), African Book Collective (ABC and , increased enrollment of school children under the universal primary education (UPE) programme.

Introduction

Prior to the nineteenth century, book publishers were not distinct from the printers and booksellers. The rise of the novel as a literary form in the United States (US) led to the creation of the independent publishing houses and increased literacy. The publication function was then confined to obtaining publication rights for authors, arranging advertisements and selling them to booksellers and libraries. The relationship between author and publisher is the foundation of publishing. The beginning of publishing in Africa started with the advent of Islam (Zell, 1995). It was also largely through the influence and activities of the Christian missions which were established throughout Africa in the early nineteenth century, that the book made its first real impact.

Although fairly insignificant in Africa, in economic terms, publishing is an integral part of the intellectual and cultural system of a country (Altbach, 1995). This system includes diverse elements as bookstores, printing establishments, universities, libraries, newspapers, radio, television, and cinema. In some countries, such a system is highly complex and in others it is rudimentary and limited. Book publishing is the activity of selecting, manufacturing, and marketing material that have been gathered in a book form (Altbach and Hoshino, 1995). Publishing is a strategic industry in the development of the African continent. The publication of books and other printed materials is an important activity in any society. Books stand at the centre of the knowledge dissemination systems of all societies. Books are not required for only students to use in schools but also for societal communication at all levels, from basic books for literacy to advanced scientific monographs. Publishing of books and other printed materials have never received the attention they deserve from development specialists, government authorities and research community (Altbach, 1995). Traditionally, the publishing industry was assumed to have emerged to meet the needs of modernizing societies. Lately, it has been discovered that there is a serious book "hunger" owing to changes in educational systems, increase in research, increased support to libraries, and the need to improve literacy levels. Publishing is closely linked to culture and education and these are deep-rooted in national goals (Ampem, 2000).

Within Africa, over the last decades, indigenous publishing has come of age despite enormous problems. Within the last 15 years, African publishing can be said to have registered over 500% growth, judging by the number of book publishers on the scene (Ampem, 2000). However, while the 1970s might have been seen as a decade of relative boom and expansion for the African book industries, the 1980s was a decade of crisis, and the situation became progressively worse in the 1990s (Zell, 1995). In the past decade constant deepening economic recession and foreign exchange constraints in most African countries did have an effect on publishing and book development. Due to the scarcity of foreign exchange, several universities and public libraries were unable to purchase books and largely depended on foreign donations. Most bookshops in African nations presented a picture of empty shelves and schools had limited books. African nations have for a long time depended on developed nations that hold the bulk of the world's resources, particularly in areas that impinge on books and publishing. The reality is that the technology, markets, and expertise, relating to publishing and books are all located in the developed nations. Publishing efforts in the Sub-Saharan African countries have aimed at reducing illiteracy, improving the content of educational materials and enhancing the self-image of the region (Ampem, 2000).

Overview of Book Publishing in Uganda

Twenty years ago, Uganda lost almost all its economic potentials due to the political insurgences at that time. The book publishing industry was affected as a result. The

industry deteriorated gradually as compared to other East African countries. There was a reduction in the number of multinational publishers and local writers, loss of foreign exchange, high production costs, limited government support, limited local and international markets, poor government policies, high tariffs, ineffective education policies and laws characterised Uganda. That was the state of the book industry until its economy became liberalised. In the 1990s liberalisation opened the markets and removed the monopolistic tendencies.

Book publishing in Uganda today is controlled by indigenous companies and those associated with foreign firms and the multinationals. Indigenous publishing ranges in size from small, one man or family business, to quite large government enterprises supported by the government. The government owned publishing includes the Uganda Publishing and Printing Corporation (UPPC) and the Uganda Literature Bureau, which was part of the East African Literature Bureau. Others are the Law Development Centre (LDC) Publishers, who are well-known for publishing books on law and work hand in hand with the Law Book Centre;. The Centre for Basic Research (also well-known for publishing researched works) and the Foundation for African Development (FAD). Indigenous private publishers have also come up and are favourably competing in the market. For instance, Fountain Publishers Limited, Monitor Publications Limited, MK Publishers and Kamalu Uganda Limited, are some of the publishers in the market. There is also a great deal of scholarly publishing, particularly at the higher institutions of learning like Makerere University, Makerere University School of Business Nakawa, Kyambogo Polytechnic, Bugema University, Nkumba University, Mbale University, and Nkozi University.

Uganda's book industry was liberalised along with many sectors in the country's economy. Liberalisation of the Uganda economy in the early 1990's has enhanced investments. In the education sector, suppliers of books have grown from two publishers who used to supply most of the educational books in the early 1990s to over ten companies to date (Tumusiime, 1998). The book publishing industry is now made up of several stakeholders like government, publishers, printers, booksellers, librarians, book associations, non-governmental organisations (NGOs) related to books and reading, writers, editors, teachers, and so on. It should be noted that as much as Uganda's book publishing industry seems to be growing steadily, it is flourishing without roots in the sense that it may not be sustained after foreign help ceases (Tumusiime, 1998). And this will have paramount effect in the near future. This has posed a challenge in the industry since there is fear that in case donor funding stops and the foreign assistance limited, the industry may not be sustainable.

Problems of Book Publishing in Uganda

Books are not published in a vacuum. Publishing is affected directly by many social, economic, cultural, and political elements and both national and international conditions and trends. The above factors have created problems, challenges and have

provided opportunities to the book industry at large. Some of these factors include foreign aid polices, language barrier, economic status, high illiteracy rate, lack of government support and lack of national policy.

Foreign Aid Policies

The foreign aid policies of the Western world have played a role in the book industry of the developing nations as a whole and the effects have not always been positive. For instance, the British government, through the British Council and the English Language Book Scheme, has imported many millions of copies of books aimed at textbook use at the university level. These books, while no doubt serving some educational needs in the country, have also affected local publishing negatively by being supplied at subsidised prices and thereby driving local competing books from the market.

Language Barrier

Language is one of the most important elements in Africa's publishing industry and Uganda is no exception. It is linked to the heritage of colonialism. The language of the coloniser generally became the dominant language of the colony. The colonial language naturally became the main language for intellectual life, in government, business and legal systems (Altbach, 1995). The dominance of the colonial language continued even after independence, and in almost every former colonial area, the issue of language remains controversial and of primary importance to educational publishing and the nation's intellectual life. The British colonised Uganda and the English language became the national language and thus affecting the publishing and book development.

Most African nations, Uganda inclusive, are linguistically diverse with different languages spoken by various segments of the population. In contrast, most, though not all, developed nations are linguistically homogenous, with notable exceptions as Canada, Belgium and Russia. In general, however, the developed nations are not faced with the problem of meeting demands of diverse ethnic groups for access to education, employment, and social and cultural services in their own languages. The existence of this linguistic diversity in African nations adds a whole new dimension to authorship and book publishing.

In Uganda, local languages have continued to occupy positions of secondary importance after English the colonial language. At all the levels of learning, English is the medium of communication. In Kenya and Tanzania, unlike Uganda, they have put more emphasis on Kiswahili as the indigenous link language although English remains very important. Because the educational system is the primary market target for book publishers, the result of this phenomenon has been that the bulk of book

publishing in Uganda done by both indigenous and multinational companies is conducted in English language.

Consequently, authors have been forced to write in the English language and this has slowed down the development of local indigenous authorship. Writing in local languages has had problems like lack of agreed orthographies that are linguistically undeveloped. Multilingualism creates problems of building infrastructure in a variety of languages with limited resources on them (Altbach and Rathgeber, 1980). It has been asserted that publishing in the mother tongue is the most effective way of promoting and maintaining literacy. When indigenous languages are used in the schools, there is creation and stimulation of reading materials in local languages. This has been a big problem for Uganda and it is a challenge that the book publishing industry is faced with.

Economic Status

The economic status of any country is perhaps another serious problem faced by the industry. Basically, publishers are faced with a cost price squeeze that threatens the book market. This is particularly the case for scholarly books, which cost more because of small print runs. Since books are not a necessity for most people, due to economic pressures they will automatically reduce the purchase of books. During inflationary situations it is even worse for libraries and universities. Also, the high unemployment levels have reduced the purchasing power of individuals.

High Illiteracy Rate

African nations are faced with high illiteracy rates and Uganda is no exception. Illiteracy has been referred to as scourge, menace, humiliation, and enemy number one, the worst evil of the human race. (Sturges and Neill, 1998). Most children can neither read, write nor articulate themselves in any language. A few are privileged to be able to go to school while majority of the children do not go to school especially in the rural areas. Those who go to school are sometimes forced to read what others want them to read not what they would wish to read. Children in schools learn about foreign countries more than their own country. Schools have no priorities to teach local tradition and culture. Without books, active literacy is near impossible. Uganda has poor reading habits. For instance in the United States, it is said that half of the US adult population and children aged eight to fifteen read books regularly.

Piracy

Uganda's copyright laws are not very effective and as a result there is increased piracy. Copyrights are intended to protect author's work by permitting the authors or the author's agent control over reproduction of his or her work. Copyright agreements are meant to protect the interests of publishers and authors. As a result of lack of

respect for copyright laws in Uganda, piracy has been on the rise. Piracy is one of the biggest problems faced in publishing. The laws are often violated since they are not very effective. The fines imposed are usually not much as they would not cost the defaulter any harm in payment. Piracy may take approximately 50% of the business of publishers (Ampem, 2000).

Lack of Government Support

Many African governments do not take books and publishing as priority in economic activities and, therefore, have given it little support. Government has concentrated more on what they call the more pressing problems like political stability. Through the education ministry, the government in Uganda has tried to support publishers and the entire industry. The government, through its policies has shown interest in the industry. First, the government of Uganda liberalised the economy which has benefited the publishing industry. The market is open for all publishers both local and multinationals. However, liberalisation, in a way, had a negative effect since some local publishers cannot compete favourably with the multinationals due to limited financial and physical resources. There has been no book policy to govern the industry in Uganda. This creates a problem in that without guiding principles in the industry the quality of services and products are bound to be poor. And worth noting is that there is still a lack of general understanding of publishing and the book industry by both the government and the general public.

Government has imposed quite high export and importation duties on goods. There are relatively high tariffs on the materials for book production. For instance, paper is a necessary ingredient in publishing, without it there are no books. Uganda per se does not produce paper, so it has got to import it. However, if the taxes are high, then production costs increase. Some publishers have resorted to newsprint, which is less expensive and most frequently available in the domestic markets. This is to cut the costs of production.

Lack of a National Book Policy

The government policy allows the Ministry of Education to buy books from publishers, consolidates and delivers the books free to primary schools through the Universal Primary Education (UPE). This has been a problem for the booksellers because they are now faced with low sales as a result of the policy above. It should be noted that Uganda is a stereotype model of donor supported book industries in the developing countries (Tumusiime, 1998). However, it is now discredited since it does not ensure sustainability of book supplies to schools when donor programmes stop. One of the ongoing donor support projects is the Uganda Primary Education Reform (SUPER) whose main donor is the United States Agency for International Development (USAID). The educational system has put more emphasis on the production of more textbooks for schools and universities. This is true in the sense

that the provision of school and university textbooks is the largest single element of publishing especially in African countries.

There has been an increasing demand for textbooks as school enrolment increases. There is also a challenge to produce more supplementary readers to promote reading for pleasure.

Limited Capital

Limited capital has had a tremendous effect on both the new and already established publishing firms in Uganda. The small indigenous private firms with limited financial resources have had to struggle to survive in the face of competition from the wealthier foreign companies. The lack of adequate funds has limited the recruitment of skilled manpower and provision of training for the unskilled. This has led to many firms having to employ staff without the necessary expertise, resulting in poor quality work. Though Uganda has relatively enough financial institutions from where to borrow, however, due to lack of adequate security and qualified managerial expertise in the local publishing industry, the banks are not willing to accept risks. Also, credit facilities for publishers are not easy while the lack of established research and development systems in the publishing business has affected attracting loans.

Under capitalisation has forced the publishers to print small quantities of books at high price. This is so because by doing so, it prevents all the other long-range efforts at developing both the publishing industry and the society as a whole.

Lack of a Virile Publishing Association

The book publishing industry in Uganda has for sometime lacked a forum to voice its problems. This has disabled the industry from sharing experiences and learning from more successful enterprises all over the world. However, lately, there have been efforts to form national publishers associations, book development councils and book trusts. The publishers of Uganda have formed the Uganda Publishers Association (UPA), which has been charged with responsibilities like formulating the book policy, organising book fairs, and co-operating with African Publishers Network (APNET). The UPA is still in dialogue with government through the Ministry of Education and Sports to develop a national book policy similar to Kenya Publishers Association. Further, there has been increased formation of fora through the civil societies like National Book Trust of Uganda (NABOTU), which together with UPA have brought together all stakeholders in the book industry. The two organisations have organised international book fairs, which take place annually, and these have attracted both indigenous and international publishers, as well as exhibitors every year. They have organised seminars and workshops, and children's activities for

literacy campaigns like children's reading tents; reading and writing competitions and cultural activities.

Book Distribution and Marketing

It is universally agreed that book distribution is one of the most difficult problems of publishing. This is due to the economy, and the rural populace who are not in position to purchase books. The rural population is not able to have access to bookstores. Where there are bookshops, little capital is often invested in them and therefore not fully stocked and with no qualified personnel. Transportation for distribution is also an impediment to publishing. It is worse in rural areas where there are limited means of transport and those in existence are in a sorry state. Marketing of books in Uganda has also been hampered by lack of adequate advertising.

Competition with Imported Books

African countries rely to a considerable extent on imported books. It should be noted that even countries with active indigenous publishing like India still import large numbers of books. There is still a lot of book importation into Uganda. This is a problem to the local publishers since importation reduces the market for local books. And more still due to the effect of colonialism on the people, there is still a perception that imported books are better in terms of quality and content than local books. To the government, it is a problem since there is loss of foreign exchange. At times the imported books are sold at relatively low prices thus forcing the local publishers to reduce their prices and as a result their profits are limited. However, such competition is healthy as it could encourage the local publishers to improve the quality of the books published.

Dominance of Multinational Publishers

Among the charges frequently levied against the multinationals are that they have perpetuated colonial education systems and have determined which local manuscripts are published. According to Zell (1995), they have been regarded as excessively profit minded, concentrating mainly on school markets. In Uganda and elsewhere in Africa, they have produced books not relevant to an African reader and an African setting. Over 90% of all the books distributed in Uganda schools are published by British-based multinationals houses whose presence in the country is merely symbolic (Tumusiime, 1998).

The British-based multinational publishers include Macmillan, Longman, Heinemann, Oxford University Press, Thomas Nelson, Cambridge University Press, and Evans. The number of Some Kenyan based publishers is also increasing in the Uganda market. Although each of the multinational companies has a local counterpart, the partnership is lop-sided. The local companies are only used for

marketing while the editorial process and printing are done abroad. Most local printers rarely get the opportunity to handle the lucrative textbook tenders. Even the local publishers print their books from Kenya, South Africa or India. Local printers have therefore not invested in modern book printing machinery because publishers do not use their services. Also, most local printers cannot handle large print runs. Altbach (1998) has given a warning to the local publishers that the multinationals often bring with them foreign control and political constraints into the local markets, and local publishers may not be able to compete favourably. However, the multinationals should be credited for their role in promoting publishing and a literate culture in Uganda as well as the provision of infrastructure and training facilities.

New Technology

The new technologies have had significant implications for developing nations and Uganda inclusive. The new technological innovations in publishing will permit the developing nations to leapfrog existing technologies and hasten book development (Altbach, 1995). While it is true that some of the new technological innovations have assisted publishing development, it can also be argued that the new technologies have been developed for the Western use not African use, and thus some have failed to work while some are not compatible to the environment. The current challenge faced by countries is to fully understand the implications of the new technologies and to carefully make choices concerning the use and role in indigenous publishing. According to Zell (1995), the new technologies should work hand in hand with traditional methods of book production in order not to widen the technological gap.

The increasing use of the Internet has promoted electronic publishing, which several publishers have embarked on. Electronic publishing (epublishing) has also become relatively common in Uganda. It has boosted the scholarly publishing and epublishing has been regarded as cost effective in production, because the information could be published quickly and updated easily. It is also interactive. However, a few problems like violation of copyright, increasing piracy and unnecessary copying are to be expected. The new technologies imported in the country are often very expensive and must be paid for in hard currency. The maintenance of these technologies has also been a problem and technical support for complex new computer based-equipment may not be available.

The use of technology in most publishing houses indicates that most work can be handled in house, and thus provide more employment to citizens, reduces production costs, and lower the selling prices.

Opportunities for the Book Publishing Industry in Uganda

The lack of regional cooperation in publishing has been a deterrent to growth. Uganda has tried to lift up its publishing and book development through regional cooperation. Uganda through the East African Community (EAC) objective of creating and maintaining regional cooperation has also formed the East African Book Development Council (EABDC), whose headquarters are in Kampala, and composed of the three East African book development bodies, namely the National Book Development Council of Kenya, Tanzania Book Development Council and National Book Trust of Uganda. Through the cooperation of the three bodies, there has been growing demand for books within the region. This has enabled the local publishers in East Africa to enter each other's markets within the region. More still, the EABDC has solicited for funds from Swedish International Development Agency (SIDA) and other donors for funding a regional project to promote books and reading.

Uganda has also joined the African Publishers Network (APNET), which is a regional cooperation. In 1999, Uganda hosted for the first time one of its conferences in Kampala. Uganda also currently holds the vice presidency of APNET, in the person of Mr. James Tumusiime. APNET seeks to promote coordinated development strategies among its members and to strengthen the national publishers associations. It has training programmes and conduct research into publishing throughout the Africa. It publishes a regular newsletter the *African Publishers Review*, and solicits for funds from international agencies to aid African indigenous publishing.

The African Book Collective (ABC) was formed by some publishers to effectively promote and distribute African books to Europe, North America and other parts of the world. It addresses both the needs of African publishers for marketing their publications internationally and the needs of libraries to overcome chronic problems of acquisition of African published material. ABC is making every effort to mainstream and promote African published books. It is a marketing and distribution agent that has enhanced the economic base of indigenous publishers.

There is increased enrollment of school children under the Universal Primary Education (UPE) programme, which spells a growing market and thus a chance for publishers to market their published books. More still, the Government of Uganda is embarking on a plan to support Universal Secondary Education, which will enable the publishers to market their products to cater for such an upcoming market. There is also an increase in the number of private and international schools as an off shoot of UPE and its limitations, and thus created an avenue for published works. There is also

an increase in the number of primary teachers colleges (PTC) and national teachers colleges (NTC) supported by government and that means they too will require relevant materials for use to be published. Uganda today, has increased the number of private universities and other higher education institutions of learning, and that will require more published works.

Conclusion

Despite the fact that Uganda is experiencing enormous problems and obstacles in its book and publishing industry, there has been an improvement since the last decade. For example, there increased is indigenisation, which has now somewhat become a reality. The great gains made so far should therefore be maintained and taken further. What happened in the past is history, however, it should be a lesson for improvement.

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Environmental Information Provision in Nigeria: The Case Study of Oil-Producing Communities

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Abstract

The paper examines the environmental information needs of community members in the oil-producing Niger Delta areas of Nigeria. For the case study, four communities which are hosts to oil flow stations were selected. These communities fall under two local government areas of Delta State. There were 260 respondents, made up of farmers, fishermen, salaried workers, students and business people. The main survey instrument was the questionnaire. Interviews and observation were also employed. The findings reveal that the most environmental information needs were in the areas of gas flaring (100%), health (98.1%) and land (96.9%). The main information sources used by respondents in meeting their information needs were town criers /community leaders (82.7%), radio (77.7%) and personal contact/visits (71.9%.). Libraries were rarely used as a source of information as only 1.2% of the respondents indicated the use of libraries as a source of information for meeting their needs. The paper also discussed the potential role of libraries

Introduction

Man has his entire life support system intricately interwoven with his environment. It is obvious that the environment is the very basis of human existence. Chambers English Dictionary defines environment as the "conditions, circumstances, etc. affecting a person's life." It is also defined as the natural surrounding or external conditions e.g. land, air and water in which all living things- plants and animals.

The desire for information about the environment is observable among students, workers, businessmen and even in rural agrarian communities. Questions are being asked about the environment. The reason being the observed environmental changes, such as rise in the sea level, more violent flooding, changing weather, seasonal periods, increased heat, which are attributed to the depleting ozone layer to mention a few. These experiences agitate the minds of the people. The Nigerian government set

up agencies like the Federal Environmental Protection Agency (FEPA), the Nigerian Environmental Study/Action Team (NEST), the Nigeria Environmental Society (NES) to mention a few. Nigeria is also a member of global environmental organisations, like the United Nations Environmental Program (UNEP). All these reflect government's interest in environmental development and management.

The oil-producing communities of Nigeria is the focal point of this study. The advent of crude oil into the Nigerian economy brought with it the attendant effect of environmental pollution. The people in the oil-producing areas have been exposed to the damaging effects of pollution, contamination, and hazards from the intensive production and distribution process (Etete, 1997).

The social, economic and cultural lives of the people have undergone changes and today the people of these oil producing communities are faced with an environment different from what their forebears had handed over to them. People have now found that acquired and accumulated knowledge or information about their environment is no longer satisfactory. Even the custodians of the social, cultural and historical facts in these communities have gradually found themselves at a loss and have therefore become irrelevant in the provision of information to their people. This is especially so, for communities with environmental problems that need urgent handling on what information to provide. There is the dearth for a credible dynamic "environmental information system" for a better and proper understanding of the situation to provide for appropriate management system (Hassan, 1992).

The two local government areas of Delta State chosen for this study are major crude oil producers. Delta State is one of the major oil-producing States of Nigeria It is located in the Southern part of Nigeria with twenty-five local government areas. Many of the local government areas are oil-producing and so have similar environmental experiences. The collective experience of the communities selected for this study is replicated in all other oil-producing communities in Delta State and Nigeria as a whole. Here, four oil flow stations with active gas flaring are sited at Uzere, Oleh, Igbide and Owhe. These four centres serve as co-ordinating centres for oil production and distribution activities. Oil pipelines run through the whole landmass of these communities. The oil prospecting companies are very much around here scouting for new crude oil locations. Life in these communities is tied round the oil. Most of their economic activities are now tied to crude oil mining. For example, the women's prefer the use of the fire from the gas flare for the drying of their cassava produce instead of the traditional fire-wood. Also, use of chemical in fishing is prevalent today among the people. The farming sites have also been reduced in order to keep away from oil pipes. All these are deviations from what used to be known in the past. Are these communities sufficiently informed today to grapple with new changes? And what are their sources of information? The challenge of this paper, therefore, is to examine these communities in relation to their changing environment and establish their environmental information needs and other relevant

information. This study will also highlight the information provision activities of the oil companies to these communities and examine the role of in the provision of environmental information to the communities.

Literature Review

Man and his environment bear a relationship that cannot be divorced. Man depends on his environment for survival and the environment needs man to keep it stable and protect it from damage. The Niger Delta area of Nigeria, however, has been unfortunate because of the presence in its soil of very large quantity of crude oil, "the black gold". All the processes involved; prospecting, mining, drilling, gas flaring and distribution of crude oil have exposed the environment to pollution, degradation and alteration.

Today, the land, air and water in the geographical zone are threatened as a result of gas flaring, oil spillage, excavation of earth, noise pollution. In a NEST (1991) publication, it was asserted that the process of exploration, drilling, refining and transportation of this product has left the environment depleted. Etete (1997), corroborating this fact, says that "Nigeria like other countries involved in oil exploration has been exposed to the damaging effects of pollution, contaminations and hazards from intensive production and distribution process". To combat this phenomenon, are the heightened activities geared towards environmental protection. Government bodies, oil companies and NGOS, have set up many agencies that work tirelessly, creating viable programmes to help in carrying out their tasks.

These programmes on their part generate a lot of information which, when provided, answer the questions of the people as to why they are faced with a changing environment. At least "every society needs information to function, more so, for the communities in the Niger Delta. For environmental programmes to succeed, there must be provision of environmental information (Adelugbugbe, 1992). It is not "unnecessary for the people to be aware of their environment and keep it safe" (Gareth 1990).

For the people in the oil communities, the provision of environmental information is of utmost importance. Every group, the women, men, students, workers and the general public must be involved and adequately provided with environmental information. In this all-important task of provision of environmental information, the need for viable, efficient and relevant information system come to the fore. Surveys have revealed that communication gadgets like the radio, television and natural communication system of visits and discussions are important (Oduaran, 1989).

For the rural, non-literate and agrarian communities, however, there is the need for the involvement of the libraries and information centres which have trained personnel in the collection, packaging and dissemination of information (Aboyade, 1987).

Methodology

Four communities were identified and used for this survey. They are Oleh, Uzere, Igbide and Owhe. These four communities are hosts to oil flow stations. They are mainly agrarian communities except for Oleh which is a local government headquarters hosting government ministries and parastatals. A total of four hundred (400) copies of the questionnaire designed for this study were distributed, 100 for each community. Two hundred and sixty copies (65%) were found to be usable and were therefore employed in the finding and analysis in this study. The questionnaire had three major sections, Part 1- Biodata, Part II – Environmental information and other information needs, Part III – Sources of environmental information.

The researcher also paid personal visits to two branch libraries of the Delta State Public Library in Oleh and Ozoro and the academic libraries of the College of Agriculture and the Oleh Campus of the Delta State University Library. The purpose was to observe their collections and services towards the provision of environmental information to the public. A verbal interview with some oil company workers was also conducted.

Findings

There were 260 respondents from the four communities hosting oil flow stations, and their distribution is as follows: Uzere; 73, Oleh; 102, Igbide; 46 and Owhe; 39. There were a total of one hundred and forty female respondents and one hundred and twenty male respondents. This sample population cuts across major professions in the area. (See table 1).

Table 1: Distribution of Respondents by Sex and Profession

Profession	Male	Female	Total	Proportion (%)
Farmers/Fishermen	20	80	100	38.4
Students	40	40	80	30.8
Salaried workers and govt employees	30	10	40	15.4
Business	30	10	40	15.4
Total	**120**	**140**	**260**	**100**

The age distribution of the respondents reveals that majority of the respondents (56%) were between 17 and 36 years, while the rest were above 36 years. Their educational level reveals that almost all respondents had basic formal education (97%). Table 2 reveals that the communities were fairly literate as only 2.7% of the selected sample had no education at all.

Table 2: Educational Qualification of Respondents

Education Qualification	Number	Proportion (%)
Primary Six	73	28.1
Senior School Certificate, W.A.S.C./ GCE /OL	60	23.1
First Degree (B.A, B. Sc	41	15..8
Teacher Training Certificate	34	13.1
National Certificate of Education	45	17.3
None	7	2.7
Total	**260**	**100.0**

The environmental information needs of the people in the communities are presented in table 3. It is evident from the findings that respondents were highly responsive to their environment. Having helped them to articulate their information needs as regarding their environment, they did not hesitate to point out what their information needs were. Gas flaring in these communities was one of the activities which interested all the respondents and all the respondents (100%) indicated that it was their major information need. This was closely followed by health information (98.1%). This is in spite of the various community health centres sited in these communities, people still had many unmet health information needs.

Acquisition of land from families and possible compensation to such families is a topic demanding a lot of answers both from the government and the oil companies operating in these communities. Most of the respondents (96.9%) desired information on land acquisition and compensation. Ranking closely is site location of their

personal residential buildings. From the answers of respondents, it is obvious that in these communities, especially Oleh, with a score of 65% wanted to know where and how to site their building. This problem was evident as residential houses were seen close to pipelines and the flow stations. Interviews revealed that the respondents were aware of the possible danger to health and life but seemed to be helpless. Oleh, especially is a fast growing town with a corresponding need for housing.

Many of the respondents (78.1 %) needed information on agricultural practices. This is because these communities are largely agrarian, and need information on improved agricultural methods to meet the changing environmental conditions. Respondents (89.2%) also expressed the need for information on accident prevention. These communities have experienced damages to their environment from oil spillages, (both accidental and deliberate), especially to their farmland and fishing sites. They needed information on how to deal with these cases whenever they occur. Less than 50% of respondents (48.5%) indicated interest on information on the weather.

Table 3: Environmental Information Needs

Information Need	Uzere N=73	Oleh N=102	Igbide N=46	Owhe N=36	Total 260	%
Gas flaring	73 (100%)	102 (100%)	46 (100%)	39 (100%)	260	100
Health treatment	73 (100%)	97 (95%)	46 (100%)	39(100%)	255	98.1
Land	78 (100%)	100 (98%)	40 (87%)	39 (100%)	252	96.9
Accident & prevention	73 (100%)	78 (77%)	45 (100%)	35 (90%)	232	89.2
Agriculture	68 (93%)	59 (58%)	40 (87)%	36 (87%)	203	78.1
Weather	22 (30%)	84 (82%)	14 (30%)	6 (15%)	126	48.5
House siting	24 (33%)	66 (65%)	14 (30%)	6(15%)	110	42.3

Respondents also indicated some other information needs like information on political matter, getting educational counselling and scholarships, vacancies for jobs and opportunities in the oil companies. It was observed that even salaried workers among the respondents needed this information. Surprisingly, information in the areas of welfare and social relations elicited little interest. On further questioning, respondents pointed out that they were satisfied that their local governments and oil companies responded to their demand for improved social amenities. Therefore they did not need much information in this area. There have been community welfare projects that had just been executed like roads, classroom blocks, farm projects and free telephone services. But much still needs to be done to improve the total environment of the people.

A list of possible sources of information was provided and respondents indicated their sources of information as shown in table 4.

Table 4: Information Sources used by Respondents

Source	Uzere N=73	Oleh N= 102	Igbide N=46	Owhe N=39	Total 260	%
Town criers/ community leaders	73	68	43	31	215	82.7
Radio	56	95	28	23	202	77.7
Visit/Contact	64	46	46	31	187	71.9
Oil extension workers	64	43	35	27	169	65.0
Television	10	37	7	19	73	28.1
Newspapers	6	15	10	20	51	19.6
Libraries	0	3	0	0	3	1.2

In these communities, town criers were employed to give out information to residents as directed by community leaders or the king and his council. In recent times, as reported by the respondents, the town criers used battery operated mega phones.

Most of the respondents also considered interpersonal communication as important and therefore relied on information received from friends, relations (especially those visiting from major towns) and community leaders as correct and reliable.

The majority of the respondents (77.7%) depended on the radio for information. Environmental information is often times passed through this medium. For example, jingles on radio and television were used in discouraging people from indiscriminate bush burning, farming near pipe line etc.

Latenmaier et al (1993) discovered from their study on the use of the radio that, in the rural and semi-urban areas, the radio was a more effective tool in information dissemination, as electricity and batteries could be used. This is its strong hold on rural and semi-urban people. From the table presentation in table 4 on sources of information, it is obvious that libraries were the source of information least consulted by the respondents.

Provision of Environmental Information by Oil Companies

Oil companies have a role to play in the dissemination of environmental information to host communities. This study observed that there was a conscious effort by oil companies to keep in touch with the host communities. There were community liaison officers, agricultural extension workers and community development officers. Oil workers disseminate information to educate and develop host communities. They inform the communities on improved agricultural methods, compensation, community development, community affairs, water provision, health and damages to pipelines or oil well sites.

They also publish news and information bulletins on various topics on the environment, health and women. There is also the provision of training for youths to enable them to become self-reliant. The pilot project at Owhe has already trained about thirty youths in this scheme. Regularly, the community liaison officers dialogue with leaders, passing on information as may be required. There is also the annual peoples' parliament which is an open forum for enlightenment. Seminars and conferences are organised from time to time by companies for the stakeholders. The participants are drawn from oil producing communities.

Their efforts at information dissemination are very commendable. However, it was observed that oil company workers and even the category of officers dealing directly with the communities hardly reside there, neither are their information bulletins deposited in any libraries for future reference by the community members. The result is that, community members receive information at the discretion of the oil companies or would have to travel to oil companies headquarters at Warri to get information. The time and money involved in this is costly.

The many uprisings and demonstrations in the oil-producing communities attest to this. Respondents were asked to indicate any constraints they had in obtaining environmental information. Results revealed that lack of adequate information system and the oil companies officers not being easily accessible were the main constraints to obtain relevant information.

Table 5: Constraints to Obtaining Relevant Environmental Information by Respondents

Constraints	Total No. of Respondents	'%
Oil companies officers not easily accessible	245	94.2
Lack of adequate information system	220	84.6
Lack of awareness of sources of environmental information	165	63.5
Language Barrier	162	62.3
Lack of time	80	30.8

The Role of the Library

Aboyade (1984; 1987) had found out from various studies that the library has a definite role to play in the provision of information to the rural, non-literate communities, as they are the only organ that possess adequate communication potentials.

Two branches of the public library in Delta State are sited in these two local government areas used for this study. There are also two main academic libraries and even a few school libraries. It is evident from this study that the libraries, especially the public libraries, have not been involved in the dissemination of environmental information to these oil-producing communities. They did not have or even participate in the various environmental management bodies set up by the government. This scenario makes the library irrelevant to information seekers.

There is a lot that libraries can do in the provision of environmental information. They need to evolve a closer co-operation with the oil companies and act as information brokers. They should do this by acquiring adequate literature on the subject matter, translating information into the local language, and mounting exhibitions to display information in graphic, visual and radio from and to the people on a regular basis.

Conclusion and Recommendations

The findings of this study reveal the fact that respondents in this study were aware of evolving changes in their of environment. It was also observed, that oil companies, especially were conscious of the need to provide information and actually did so at their own discretion. Findings however showed that the illiterate majority depended

on community heads for needed environmental information and so did not always get their information needs satisfied. The results have been youth demonstration and at times sabotage of oil installations.

It is recommended that there should be provision of adequate environmental information to oil-producing communities. Shell Petroleum Development Company (SPDC) and the SHELL/NNPC Joint Venture should establish community information centres. These centres could store relevant and adequate information on all operations connected with oil exploration such as bulletins, posters, photographs and manuscripts found with individuals. These could be collected and kept for daily and future reference.

The majority of the residents in the oil communities are non-literates, hence the power of the local language in keeping the people informed cannot be ignored. Environmental information materials need to be translated and put in radio cassette for direct dissemination to the people. Libraries definitely have a major role to play in this respect. There should be a conscious effort to integrate libraries and librarians into the processes of environmental information provision. Librarians work and live in these communities. If they are seen as relevant in the provision of required information, the daily frustrations the people experience in getting information would be removed. A cordial relationship has to exist between the custodians of the environment and those exploring the environment. This would in turn guarantee the protection and development of the environment.

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Information Technology Knowledge and Skills of Agricultural Researchers in Botswana

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Abstract

This study was conducted to determine the level of information technology use among all the 39 lecturers of Botswana College of Agriculture (BCA) and 24 researchers of the Department of Agricultural Research (DAR) in Botswana. The questionnaire administered was developed around the domains which literature has asserted could contribute to the use of information technology in agricultural research. The questionnaire was validated and the reliability estimates calculated. The data collected were analysed using frequencies, means, percentages and rankings. The study revealed that the researchers placed a high value on information technology in agricultural research, but they possessed insufficient knowledge and skills of software and general IT use.

Introduction

Agricultural research in Botswana is a primary function of the staff of Botswana College of Agriculture (BCA) and the Department of Agricultural Research (DAR). This the study aimed at establishing the use of information technology (IT) by researchers in the two institutions. Botswana is essentially an agricultural country as a large proportion of the inhabitants depend directly or indirectly on agriculture for their survival. Research into agriculture is therefore considered an important function of the two institutions.

The Botswana College of Agriculture (BCA) was established in May 1991 as an affiliated institution of the University to Botswana (UB). BCA took over all the assets and liabilities of the former Botswana Agricultural College (BAC) which was abolished on the coming into effect of the act establishing BCA in its place. BCA was officially inaugurated as an associate institution of the University of Botswana in June 1991. Many research staff were inherited from BAC while some were recruited through the University of Botswana establishment to constitute both the academic and non-academic staff of the college. The college awards certificates, diploma as well as bachelor of science degrees in all aspects of agriculture.

The Ministry of Agriculture from where the Department of Agricultural Research was carved out was initially started in Mahalapye in 1926. In 1935, all government agricultural endeavours were incorporated into a Division of Agriculture. By early 1960s, the Division of Agriculture was split into two Departments (Agricultural Research and Agricultural Extension Services). By 1966, the Ministry of Agriculture was established and Divisions responsible for various agricultural functions including agricultural research were also established. In 1968, the Department of Agricultural Research moved to Sebele as an autonomous department headed by a Director but still under the aegis of the Ministry of Agriculture (MoA). Both the Botswana College of Agriculture (BCA) and the Department of Agricultural Research (DAR) are responsible for generating agricultural research technologies for Botswana farmers and end users.

Information Technology (IT) and Agricultural Development

Organisations introduce information technology (IT) for many different reasons. In some cases, IT is used by managers to improve productivity, marketing of products and communications. It is also used by managers to solve some critical problems. According to Kasongo (1993) information technology is widely preached as having the power to narrow the gap between advanced industrial and the less developed countries, and having the capabilities which will allow the less developed countries to leap-frog development. He further reported that this technology had accelerated the rate of social and economic development in developed countries. Foster (1993) stated that few businesses in the world could survive without information technology. Many are totally dependent on information technology, e.g. agricultural financial institutions. The correct use of information technology improves business efficiency and profitability.

Information is crucial in agricultural production, in addition to land, labour and capital. However, investment in IT has been predominantly in industrialised countries, despite the potential for cost-effective applications of information in developing countries. Recent developments in information technology in agriculture make it particularly relevant for rural areas. The use of computers and management system in agriculture makes it possible to collect information over many years and store for management purposes (Goense, et al 1996). As an example, the introduction of computers to

agriculture offers ways of quantifying the effect of field variability of growth factors by measuring within field differences in crop yield.

Dillman (1990) found that the social and economic organisation of rural regions in the USA is now being affected by the 'information age'. Agricultural changes brought by the increased use of information technologies include: (1) production of niche markets; (2) increased emphasis on value added-agriculture; (3) development of more direct linkages between farmers and consumers; .(4) changes in who farms and the way farming is accomplished; (5) changes in the requisite skills for being the farm operator; (6) increased heterogeneity of farm operations; and (7) changes in the support systems necessary for efficient agricultural production.

The Use of IT Among Agricultural Researchers in Africa

Farm technology in the commercial farming sector has become increasingly sophisticated and also subject to change (Bembridge, 1991). Agricultural researchers consequently have to become more efficient in generating technological and economic information to meet the demands of farm families in Africa.

According to the UNDP Human Development Report (1999), men dominate information technology in Africa when compared to women. Also in Africa, South Africa is leading in the use of information technology in agriculture (Armarteifio, 2001). Jansen (2000) reported that within Africa, access to IT varies in the following order: Southern, North, East, West and Central Africa. Where IT is available in these African countries the use has been confined mostly to the cities.

Objective of the Study

The main objective of this study was to determine the level of information technology usage among the researchers of Botswana College of Agriculture and (BCA) and the Department of Agricultural Research (DAR) of the Ministry of Agriculture, Botswana.

Based on the main objective of the study, the following specific objectives were developed to:

- determine the value of information technology as perceived by the respondents
- determine the general information technology knowledge and skill levels possessed by the respondents
- Find out the software knowledge and skills possessed by respondents.

Specific Use of IT in Agriculture

In agriculture, just like in other fields of knowledge the value of IT use cannot be overemphasised. Word Processing programs such as Word Perfect, Microsoft Word are very useful in documenting and retrieving research findings. Also the various types of windows programs are useful for retrieving and documenting research findings from one researcher to another. Research software could be useful in formulating livestock feed and determining the hormonal level of dairy breeds to ascertain the periods of milking. Computer graphics could also be used for presenting research papers at conferences and in teaching. Spreadsheets are useful in presenting research data and are also used for accounting purposes. Databases are used to gain access to research findings while Desktop Publishing is useful in publishing research work for wider readability. Presentation software such as Power Point is useful in presenting research findings particularly in a research conference and also for teaching research concepts. World Wide Web browsers such as Netscape and Internet Explorer provide avenues for researchers to gain insight to research work in any part of the world within a very short time, while utilities are useful in providing anti-virus resistance to computer programs. This on the other hand makes it possible for researchers to access their files without problems and without fear of losing any information. All the above make it imperative for any researcher in agriculture to have a thorough knowledge of skills on aspects of IT.

Methodology

The target population of the study was all the twenty- four (24) research officers in Department of Agricultural Research in the Ministry of Agriculture and all the thirty-nine (39) lecturers at Botswana College of Agriculture (BCA). They were all selected for this study. The population was considered accessible and in a position to provide the information required to achieve the objectives of the study. The list of researchers in the Department of Agricultural Research (DAR) was collected directly from the personnel officer while the list for Botswana College of Agriculture was collected from the college prospectus. The list was thoroughly checked for duplications of names to control a frame error. Sampling error was not a threat because it was a census study.

Instrument for Data Collection

The instrument for data collection was a questionnaire developed by Kotrlik et. al (2000) with some slight modifications to suit the purpose of Botswana conditions and expectations. Content validity of the instrument was established by three lecturers teaching in the Agriculture Economics Extension and Education Department of Botswana College of Agriculture. The lecturers' suggestions were incorporated into the instrument for data collection before use. Reliability of the instrument was determined by pilot testing using tutors (N = 15) and technicians (N = 15) at Botswana College of Agriculture. The reliability coefficient was determined using Crombach alpha (x) formula which ranked between 0.71 = 0.91, indicating a high level of reliability.

Method of Data Collection

The actual data collection for the study started in March 2001 and was completed in April 2001. The data were obtained from the lecturers of Botswana College of Agriculture (BCA) and the researchers of the Department of Agricultural research (DAR). The target population was considered appropriate because they were the only two institutions in Botswana responsible for conducting agricultural research in the country with the government as the main source of funding.

The questionnaire was compiled in a booklet form and each booklet was personally given to the thirty-nine (39) BCA lecturers in their offices. On the other hand, twenty-four (24) booklets of the questionnaire were handed over to the Director of the Department of Agricultural Research (DAR) for distribution to his research staff. Two weeks after, a personal follow-up visit was made to the individual lecturers in their offices to collect the completed questionnaire from them. All the respondents completed the questionnaire.

Findings

Background Information

Table 1 shows the background information of the respondents. Majority of the respondents were male (81%) and 85.7% of the respondents had postgraduate degrees. The respondents were highly experienced as 88% had more than five years of research experience.

Table 1 : Background Information on the Respondents

Demographic Characteristics	Frequency	Percentage %
Gender		
Male	51	81
Female	12	19
Total	**63**	**100**
Educational level		
Bachelor's degree	9	14.3
Master's degree	26	41.3
PhD	28	44.4
Total	**63**	**100**
Research experience		
1 to 5 years	7	11.1
6 to 10 years	14	22.2
11 to 15 years	6	9.5
16 to 20 years	19	30.2
21 and above	17	27.0
Total	**63**	**100**

Value of Information Technology as Perceived by Respondents

Table 2 shows the value of information technology as perceived by respondents. The respondents were asked to give their perceptions regarding some statements on the value of information technology, on a 5–point Likert rating scale anchored as follows: 1 (Strongly disagree), 2 (Disagree), 3 (Undecided), 4 (Agree), 5 (Strongly agree). To interpret the data the mean of 3 and above was used to denote agreement , while mean below 3 was used to denote disagreement. The results in table 2 revealed that out of the 21 statements in this domain, the respondents agreed with positively worded statements in varying degrees ranging from 4.9 to 3.6. Furthermore, the statements within the same domain were ranked. It was found that the statements, "researchers should know how to use computers and researchers should have computers available" with the mean of 4.9 respectively both came first. The statement which sought to know if researchers should know how to use the Internet and Internet connections with a mean of 4.8 respectively both came second. The statement "Information Technology is a useful research tool" came fifth with a mean of 4.7.

The respondents however disagreed with all the negative statements. For example, the statement which sought to know if information technology can cause more problems than it can solve was ranked last amongst the 21 statements with a mean of 1.3. The ranking of the remaining negatively worded statements are contained in Table 2. Using the mean of 3 as a cut-off point, all the 15 positively worded statements attracted a decision of "agree" while the 6 negatively worded statements attracted a decision of "disagree."

Table 2: Value of Information Technology as Perceived by Respondents

DOMAIN	MEAN	SD	RANK	DECISION
1. Researchers should know how to use computer	4.9	0.3	1	Agree
2. Researchers should know how to use the Internet	4.8	0.4	3	Agree
3. Researchers should have the following technologies available in their offices				
a) computer	4.9	0.3	1	Agree
b) internet connections	4.8	0.4	3	Agree
c) multimedia computers	3.9	0.9	10	Agree
d) laser disc players	3.6	1.1	14	Agree
e) satellite down link capability	3.6	0.9	14	Agree
f) video conferencing capability	3.8	0.9	13	Agree
4. Information Technology can:				
a) help individuals to apply his/her knowledge	4.3	0.8	8	Agree
b) improve quality of research	4.6	0.6	6	Agree
c) be a useful research tool	4.7	0.6	5	Agree
d) add interest to researching	4.2	0.8	9	Agree
e) improve researcher's effectiveness	4.4	0.7	7	Agree
f) encourage researcher's innovation	3.9	1.0	10	Agree
g) allow researcher's flexibility in planning their research	3.9	1.0	10	Agree
h) too expensive to be cost effective	2.1	1.1	16	Disagree
i) create problems for the researcher	1.6	1.0	18	Disagree
j) make researchers close to one another	1.7	1.0	17	Disagree
k) isolate researches from one another	1.6	0.8	19	Disagree
l. cause more problems that it can solve	1.3	0.7	21	Disagree
m. have adverse effects on researchers	1.5	0.9	20	Disagree

General Information Technology Knowledge and Skills Possessed by Respondents

Table 3 depicts the general information technology knowledge and skills possessed by the respondents. The respondents were asked to give their perception regarding the general information technology knowledge and skills on a 5–point Likert rating scale anchored as follows: 1 (Very poor), 2 (Poor), 3 (Average), 4 (Very good), 5 (Excellent). To interpret the data, the mean of 3 and above was used to denote above average and the mean below 3 was used to denote below average. The result on table 3 revealed that out of the 12 statements, 10 were above average while 2 were below average. It was found that the statement which sought to know if the researchers possessed the knowledge and skills on the use of Internet came first with the mean of 4.0, followed by the one which sought to know if researchers had the knowledge and skill on how to operate the computer. The statement, which sought to know if researchers had knowledge and skill on the use of the World Wide Web came third with the mean of 3.7. The last two statements in the domain which were below average were the ones which sought to know if respondents "had knowledge and skill on the use of video conferencing" with a mean of 2.4 and satellite down linking with a mean of 2.3 .

Table 3: General Information Technology Knowledge and Skills Possessed by Respondents

DOMAIN	MEAN	SD	RANK	DECISION
1. Knowledge/skill about the major components of the computer	3.4	1.0	7	Above
2. Knowledge/skill on how to operate the computer	3.9	0.9	2	Above
3. Knowledge/skill on integrating computer based researching materials into research	3.5	0.9	5	Above
4. Knowledge/skill on how to select information technology that fits research needs	3.6	1.0	4	Above
5. Knowledge/skill on how to evaluate software for researching	3.2	1.0	9	Above
6. Knowledge/skill how to locate computer based research materials for use in research	3.5	1.0	5	Above
7. Knowledge of the use of				
a) multimedia computer	3.3	1.2	8	Above
b) internet e-mail	4.0	1.0	1	Above
c) laser disc player	3.1	1.3	10	Above
d) World Wide Web	3.7	1.2	3	Above
e) video conferencing	2.4	1.4	11	Below
f) satellite down linking	2.3	1.3	12	Below

Software Specific Knowledge and Skills Possessed by Respondents

Table 4 represents the software-specific knowledge and skills possessed by the respondents. The respondents were asked to give their perceptions regarding some statements on the software knowledge and skills they possessed on a 5 – point Likert rating scale anchored as follows: 1 (Very poor), 2 (Poor), 3 (Average), 4 (Very good), 5 (Excellent). To interpret the data, the mean of 3 and above was used to denote above average and the mean of below 3 was used to denote below average. Furthermore the results revealed that 5 out of 11 were above average and 6 out of 11 were below average. The statement that sought to know if researchers possessed the knowledge and skills of word processor came first with the mean of 3.9. This was followed by the statement on possession of "knowledge and skills of windows" with the mean of 3.5. The third one, was the one that sought to know if they possessed the knowledge and skills of spreadsheet with the mean of 3.4. The statement which ranked last in the domain was the one which sought to know about the possession of knowledge and skills by the respondents on Grade Book with a mean of 2.3.

Table 4: Software-Specific knowledge and Skills Possessed by Respondents

DOMAIN	MEAN	SD	RANK	DECISION
1. Word processor (e.g. Word Perfect, Microsoft, Microsoft Word)	3.9	1.1	1	Above
3. Widows (e.g. Macintosh, Windows 3.1, Windows 95, Windows NT)	3.5	1.1	2	Above
3. Grade Book	2.3	1.1	11	Below
4 Research software (e.g. livestock feed formulation)	2.5	1.2	9	Below
5. Graphics (e.g. Corel, Paint brush Paint, Freehand, Print shop)	2.9	1.2	6	Below
6. Spreadsheet (e.g. Lotus 1-2-3, Excel, Microsoft Works, Quattro)	3.4	1.0	3	Above
7. Database (e.g. Approach, Database, Access, Microsoft Works	2.7	1.2	8	Below
8. Desktop publishing (e.g. Page Maker, Ventura)	2.5	1.2	9	Below
9. Presentation software (e.g. Power Point, Word Perfect presentation)	3.2	1.2	5	Above
10. World -wide browser (AOL, Netscape, Internet explorer)	3.3	1.3	4	Above
11. Utilities (Norton, PC tool, Virus Protection, Windows installer	2.8	1.2	7	Below

Implications of Study

The personal characteristics of the respondents revealed that there were more male researchers than female researchers in the two research institutions. The implication of this

is that the issue of gender balance which is being given a serious consideration world wide is yet to be addressed in the two institutions. The findings also revealed that researchers from the two institutions placed a high value on information technology. This implies that they were aware that IT is very important to them as researchers, and, therefore, may be more inclined to learn more about IT in agricultural research. Furthermore, the staff of the two research institutions seem to agree that IT is an important tool for technology generation. The study also implies that they understand that IT could generally improve agricultural research in Botswana, just as it has improved agricultural research in many developed and developing countries. It also implies that they know that IT can improve the quality of research, has great potentials for problem-solving and promotes a good communication network which could facilitate efficient information transfer among researchers in the world. These facts can be substantiated with the researchers' favourable responses to the positive aspects of the questions on the value of IT to agricultural research.

The IT knowledge and skills possessed by the researchers were adequate as implied by their responses. This is probably because a majority of the researchers had post-graduate training and were exposed to the use of IT in agricultural research during the course of their training. Only the knowledge and skills of video-conferencing and satellite down-linking were not possessed by the researchers, thus indicating that they might not have been important for agricultural research.

The findings also revealed that most researchers were below average in their knowledge level and skills in six out of the eleven computer software examined. The implication of this is that the researchers might be behind in the modern ways of conducting research in agriculture. The result of this might lead to lack of modern knowledge and skills to develop varieties that are suitable for use in Botswana conditions. This might delay progress in the efforts to ensure that Botswana is self-sufficient in agricultural production through introduction of locally improved varieties to farmers.

The inability of the researchers to use graphics and desktop publishing as reported by the researchers implied that they might have problems producing very good, explicit and clear records of research findings. However, these problems could be overcome by training the secretaries in the institutions to perform the graphic and desktop publishing jobs. The lack of competence in computer utilities which was found out in the research could also be overcome by either in-service training or by employing a computer manager to attend to the problems when they arise.

Conclusions and Recommendations

The study revealed that most researchers in the institutions valued IT in agricultural research as they disagreed with all the negative statements regarding the use of IT in agricultural research. Also a majority of the researchers possessed IT knowledge and skills for agricultural research, especially knowledge and skills in word processing, windows, spread-

sheet, and World Wide Web browser. In order to derive maximum benefit from IT, the institutions should make it a policy to upgrade their staff on IT through in-service training. Attention should also focus on areas of IT needs of the research staff during the training.

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Problems and Challenges of Automating Cataloguing Process at Kenneth Dike Library, University of Ibadan, Nigeria

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Abstract

This paper discusses the problems faced by Kenneth Dike Library in automating its cataloguing process since 1992. It further attempts to identify some of the constraints inhibiting the success of the process: inadequate funding, dearth of systems analysts, absence of dedicated commitment to automation on the part of the library management. There are some of the issues discussed. It concludes by proffering some solutions that could ameliorate the problems posed.

Introduction

This paper attempts an examination of the impact of information technology (IT) on the cataloguing of materials at the Kenneth Dike Library (KDL) since its introduction. Can a success story be told as was reported in some African University Libraries?

Information technology (IT) has had great impact on virtually every sphere of activity including the services provided by librarians world over. With the introduction of IT, the expectation is that the mission of libraries would be transformed from routine acquisition of information, organising information, making it available and preserving it, to one of facilitation of access to all forms of information that meet customers' needs. It will also provide the assurance of continuous improvement of resources and the provision of prompt services. For over a decade, many articles have been written on automation processes in Nigerian libraries. The impression emerging there from is that the Nigerian libraries have caught the automation bug. But has the introduction of IT been a success story at the Cataloguing Section of KDL at University of Ibadan?

Kenneth Dike Library

Kenneth Dike Library was established in 1948 when the University College, Ibadan took off. The library system presently serves a student population of about 26,000 (full-time and part-time) and a virile academic community of nearly 2,000. It also provides a back-up for many research institutes and other Nigerian university libraries. It contains over 600,000 volumes and receives over 6,000 current journals and other serial materials.

KDL was first challenged by the IT revolution in the 1970s but the automated idea was limited to the serials catalogue which was jointly produced by the library and the University's Computer Centre up to 1980 when the harsh economic constraints of the 1980s contributed to its failure. By early 1990, the library started serious automation of its library functions. It started with a computer system donated by the Technical Centre for Agricultural and Rural Co-operation (CTA) in Netherlands for CD-ROM databases search and IBM PS 80-III with 120MB hard disk purchased from local vendor. To date, the library has 30 computer systems of different configurations. The main server is a Pentium 200 Mhz, IBM Compatible Model with 64MB RAM and 2.1 GB hard disk, and an equally powerful IBM Compatible Pentium 75 Micro Computer with 32MB Memory and 2.7GB hard disk as CD-ROM Server. Other computers were dedicated to specific functions such as cataloguing, reference, circulation, OPAC and E-mails.

All the systems are networked, running on a windows MT4 Software. The CDS/ISIS Software donated by UNESCO was first used and was later replaced with TINLIB (Tinman Library) software. The TINLIB is a comprehensive library management and document retrieval system with the following integrated modules: catalogue and retrieval, circulation control, monograph acquisition, serial management and data formatting and transfer within functional report-generator – TINGEN. It is also networked.

CD-ROM technology was introduced into KDL in 1991 through a donation of a CD-ROM workstation by CTA. This came with databases mainly on agriculture. The library went further to acquire more databases in subject areas like medicine, social sciences, education, technology, science and arts. Thus, CD-ROM technology opened up opportunities for searching electronic literature to both students and faculty members. The library also purchased CD-MARC databases in 1992 to facilitate the processing of new acquisitions.

Cataloguing before the Introduction of IT

Under the manual system which has been in practice since the inception of the library, different types of bibliographic tools were used to process materials. In the 70s, the prepared catalogue cards came with the newly acquired books. This helped

in the cataloguing process and in getting the books to the shelves on time. The library also made use of the Library of Congress (LC) classification scheme and (LC Subject Headings, thereby making use of the National Union Catalogue (NUC) as a bibliographic searching tool. When the printed copy of NUC was stopped, the microfiche edition came up in the 1980's, economic crutches, budget cuts and exchange rate fluctuations affected the procurement of these searching tools. Their non-availability made cataloguing processing a bit tedious in the mid- 80s at the KDL. The library had the NUC dated from pre-56 edition to 1982 edition, while the microfiche was ('88 – 90). Books published between 1983 –87 that were acquired were processed mostly through "original cataloguing." Those that came with Cataloguing-in-Publication (CIP) also facilitated the processing of materials for use. Due to lack of current bibliographic searching tools, the volumes of books processed were reduced.

By mid-1992, KDL purchased Library of Congress CD-MARC databases to facilitate the processing of books that had been put aside due to lack of bibliographic materials before then. The statistics of processed books picked up again in the 1993/94 session, although there were other factors that reduced the statistics hitherto (e.g. incessant strikes, shortage of cataloguers, etc).

The success of the impact of IT on cataloguing process has been extensively reported in the literature. The International Institute of Tropical Agriculture (IITA), Ibadan discontinued the use of traditional card catalogue in 1984 and adopted a computerised database system in 1989, according to Ogunrombi and Oladokun (1992). This was followed by the Nigerian Institute of International Affairs (NIIA) Library in 1991 when Tinlib software was adopted for its library services (Oni,1998). Specially, the application of IT for cataloguing process were reported by Nkereuwem (1997) in Calabar and Abolaji (2000) at Hezekiah Oluwasanmi Library (O.A.U. Ife). University of Ibadan started the application of IT to cataloguing process in 1992. Ojedokun (1996) reported on cataloguing and CD-MARC in the KDL, while Adeniyi (2000) also reported on the use of library automation software packages at KDL.

Application of IT to Cataloguing Process in KDL

The creation of a database for the library is the major task of the cataloguing section. With the introduction of IT, necessary equipment- both hardware and software were given to the library. The CDS/ISIS was the software first used for cataloguing of books. The manual input worksheet was re-designed to reflect the new ideas which staff found difficult to comprehend at the initial stage but got used to later. But CD/ISIS was eventually replaced with TINLIB. Data were down-loaded from CDS/ISIS software into the new TINLIB database. TINLIB became fully operational in September 1993. However, it was soon discovered that no software is problem-free. TINLIB software had been giving a lot of technical problems which the

systems librarian could hardly manage and the vendor's help desk response rate to queries from the library was not encouraging. The consequence was an incessant breakdown of the system, frequent network errors and low operational speed of the system. All these problems slowed down the automation process in the library. The library is still making use of this software for its database maintenance. CD-MARC was made available in the 1992/93 session for searching of materials and it proved especially useful for the processing of about 15,000 World Bank Books acquired in 1992 and processed in 1993.

The whole gamut of book processing was instantly made easier: bibliographic details of books were searched from the CD-MARC, data were readily put into a worksheet for cataloguers to edit and passed to data entry clerks for onward input into the KDL database using the TINLIB catalogue module. The advantages derived from the introduction of IT could have been enhanced were it possible to import records found in CD-MARC into the existing database. Unfortunately, that was not possible because of the incompatibility of CD-MARC import file with that of TINLIB. As a result, every found item had to be keyed into the system. Because of lack of technical know-how of the TINLIB software on the part of the system analyst, a lot of records were lost, some missing, and there was the backlog of records awaiting to be keyed into the database. The resultant effect was a delay in opening the Online Public Access Catalogue (OPAC) to library users. But the enthusiasm of using CD-MARC to process was doused when the CD-ROM Towers that was needed to read the MARC got spoilt during the 1998/99 session. Thereafter, processing of materials reverted to "Original Cataloguing" or use of "Cataloguing in Publication" (CIP) where it existed.

What further compounded the rate of processing was that the Library of Congress had gone on Internet and KDL could not be connected to it to get information because it lacked needed facilities and the required financial resources to be linked on to the Internet. An alternative tool was sought and the Head of Technical Services, introduced a new software ITS for Windows by The Library Corporation (TLC). This alternative tool is currently in use as a bibliographic searching tool as well as for data creation. Trial runs were being made to determine the extent to which the new software can alleviate, if not solve, the problems that had been encountered with other software.

Impact of IT on Cataloguing Process

The impact of IT on cataloguing at the KDL has not been totally significant compared with the reported progress made in some other universities even within Africa McBride (1983) recounts how automation changed the trend of her career. Her paper alluded to the close down of card catalogues, the development of on-line systems, the joining of bibliographic utilities, standardisation of cataloguing records, formation of networks with resources being shared and staff being re-assigned. Efforts have been

made to utilise technology and cut costs without harming the budgets. These developments affect the individual library and the cataloguers and changed their assignments from original serial cataloguing to supervising copy cataloguing operations.

Also, automation of cataloguing was reported to have enhanced efficiency and produced new assignments for copy cataloguers. It brought in OPACs, which are replacing card catalogues. Authority work has been made faster and more efficient and standard records are produced for libraries and making room for copy cataloguing and giving a more responsible role for the paraprofessionals. Evidently, automation has taken the 'heat' out of the job traditionally performed by professional cataloguers.

But in contradistinction to the success stories reported elsewhere, after about ten years of dabbling with IT at KDL, the OPAC is yet to be ready for use. Most of the processing is still being done manually. The database created is still not error free. The reconversion project which was initiated about two and half years ago has been abandoned due to lack of interest and funds, para-professionals are still at their routine jobs (i.e. checking and filling of cards, etc.). The card printer for printing from the computer is not functioning and cannot be replaced for lack of funds. Typists still type units cards for every processed material, while data can not be imported from the Library of Congress and CD-ROM databases to KDL database.

In relative terms, the number of professionals on ground are still high – eight, including the Chief Cataloguer. There is no resource sharing among university libraries in Nigeria, in spite of the overt use of a common TINLIB software and university libraries are not networked.

Admittedly, reference and information services are changing under the influence of technology while books are no longer the only source of information. Computers, however, are expensive, need re-trained staff and an enthusiastic management. All of these are happening at a time of severe budget cuts and stringency. The foregoing partly explain the failure of KDL to drive and enjoy the full benefits of IT. Human and technical factors equally militated against the achievement of a success story. In specific terms, some of the identified problems can be described as following.

Factors Militating Against Automation

There are many factors that have made automation of the cataloguing process in many Nigerian university libraries a failure. Some of these factors are listed below.

The Attitude of Management to Automation

Most university librarians in Nigeria are still very conservative. They see automation as a myth which they do not want to demystify. Their ideas of computerisation stop at buying a few PCs to give the impression that automation is going on in their establishments. They are not committed to using computers to generate information for their users. They would rather acquire printed materials than develop databases. There is an urgent need for re-orientation of university library managers to embrace the right vision of IT. Literature abound on developments taking place in other parts of Africa. They need to be exposed through regular re-fresher courses and visits to other libraries outside the country to up-date their knowledge and to better appreciate the benefits of developing databases. In this regard, appropriate well-funded policies could be devised. There is the need to interact with other librarians through conferences, seminars and workshops.

Capital-Intensive Facilities and Cash Constraint Problems

The advent of IT and its attendant acquisition of computers coincided with the period of dwindling resources available to universities. Since the late 1980s to date, the austere times experienced by Nigerian universities came not only with budget cuts but also with irregular release of approved allocations. The result is that while librarians strive to automate piecemeal, oftentimes, their attempts are stultified by current technological advancement and innovations which render their stock of acquired computers obsolete.

A way out of this vicious circle is for library managers to take full control of their resources and ensure effective budgeting to optimise desired goals. Under the current practices in Nigerian federal universities, ten per cent (10%) of total university recurrent budget is earmarked for the management and running of the libraries. At the KDL of the University of Ibadan, it is often a case of virement from the library portion of the recurrent grant to meet other needs whenever the University faces a cash flow problem. Besides, what further compounds the problems for the library is that such virements are usually made without the knowledge of the University Librarian who is not made a signatory to the library account! This kind of scenario makes it difficult for library managers to buy print and non-print materials as well as provide funds for purchase and maintenance of equipment. Consequently, KDL has, by and large, depended on the funding for computerisation projects from donor agencies.

To keep pace with current technological advancement, library managers need to supplement donor funding. But as Msuya (2001) observed in his paper "experience shows that many automation projects in developing countries, especially in Sub-

Saharan Africa are donor-funded." The first computer at KDL was donated by CTA. Due to inadequate funding as well as poor financial management, when the CD-ROM Tower for the cataloguing section broke down it could not be replaced until eighteen months after.

As earlier observed, a way out of foregoing short comings is for library managers to take full control of the ten percent (10%) of the total University recurrent budget earmarked for the management and running of the library. The University Librarian should be a signatory to the account of which between five and ten percent should be set aside for hardware and software development and maintenance. With a predictable level of funding, library managers will be encouraged to develop a five-year plan for the library.

Dearth of Systems Analysts

Shortage of management and technical expertise is the bane of IT development in Africa. According to Ojedokun (2000), only Egypt and South Africa have IT skills in abundance in Africa. The mobility rate of system analysts employed in university libraries is high due to the poor pay structure that exists in the universities as compared with the private sector. Even when staff are trained, once they acquire the coveted expertise and experience, they leave for greener pastures. At KDL, the Computer Unit was set up in 1990 and within a spate of eight years, the headship or the personnel in charge had changed four times. Three out of the four left for jobs in Botswana and America. Such frequent changes have affected the development of the unit.

Ill-Equipped Library Schools

The product of Nigeria Library Schools are not prepared to face the ever-changing demands of information technology. This is because, due to paucity of funds, the schools themselves lack the needed equipment to teach practicals, thus, automation is taught in abstract. Non-dynamic school curriculum continues to deal with methods and routines that are essentially obsolete in the competitive technologically advanced environment. There is a compelling need on the part of the library schools to constantly upgrade their curriculum which should be well-funded to ensure, as Ojedokun (2000) observed, that teachers "... changed their role from being teachers of pre-fabricated facts to facilitators of active learning."

At KDL, a great deal of manpower time is lost training newly recruited librarians in the practice of librarianship. Often, because of their ill-equipped background, their rate of skill absorption is slow and expensive. Even graduate systems librarians who are expected to be versed in computer usage had to be re-trained by the University's software vendor. This means that the benefits of such training and re-training take a long time to manifest.

Lack of a Maintenance Culture

Frequent systems breakdown due to lack of maintenance is another hindrance to IT application at KDL. Automation requires regular maintenance – a culture which an average Nigerian has not imbibed. All types of equipment are acquired and subjected to continuous use until they break down. Even where maintenance funds is not the problem, the attitude tends to be "why bother when the equipment is still working."

Given the inadequate level of funding and the irregular release system, the account books of KDL were not up-to-date to clearly indicate what was budgeted for IT maintenance. Available data showed only estimates without reference to actual expenditure. As an example, there was no indication from the records that any agreement fee was paid to the software vendor over the past three years. The obvious consequence of this is the lukewarm response often received from the vendor when called upon to help revive broken-down systems. And when the systems librarian tried to by-pass the vendor by contacting the international agencies via e-mail, the agent, always advised the systems librarian to contact the University's software vendor. At the end of the day, the level of maintenance effected often depended on what the systems librarian could do. Also, software vendors' response to distress calls have not been encouraging either. All they have been interested in is in making rip-off charges because there was no contractual agreement or service contract between them and the library before the installation of the system. Because software vendors are few in number they come on "recommended status" to library management deprived of selection from a free and wide market of vendors. Lack of competition allows and encourages vendors to be less proactive in attending to client's distress calls. To put an end to this kind of nonchalant attitude, library managers should devote serious attention to a careful selection of software vendors with a view to selecting those who can serve them better and effectively too. Besides, a service contract should also be agreed on and signed by both parties from the onset.

Non-Existence of a Staff Development Programme

KDL has not had a staff development programme since the computerisation of the cataloguing process started. In fact, there has never been a comprehensive in-house training for the various categories of staff in the library. Whereas to be able to cope with modern technological advancement, staff need to be trained and re-trained regularly. The needed training could take the form of attendance at conferences, workshops, seminars and formal course of study. There has been no serious effort at KDL to train staff to cope with the demands of automation, though occasionally, a

few staff had attended workshops. The management's position at KDL was to advise the staff interested in acquiring computer or IT skills to do so at their own expense. Such a position is unwholesome. There is need for the authorities to set aside funds for training and encourage all categories of staff to acquire IT skills.

Conclusion

What emerged from the foregoing is the need for the management of KDL to embrace IT with the dedicated seriousness it deserves. For a success story to be told, the problems outlined above should be addressed and urgently too to keep abreast of developments in university libraries within Nigeria and globally.

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Short Communication

Assessing the Library Collection of the University of Nigeria, Nsukka Library

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Abstract

The purpose of this study was to ascertain the currency of the science and technology titles acquired by the at the University of Nigeria Library, Nsukka. Systematic random sampling was used to select and evaluate titles from the shelf list. The evaluation study showed that majority of books in the sciences were obsolete while technology had more recent books. The study revealed that over 30% of the titles were worn-out and evenly distributed among the subjects. In view of the finding it is recommended that assessment in other subject areas should also be carried out to identify obsolete titles, worn out books, missing titles and mutilated books.

Introduction

The major function of a university is the pursuit, promotion and dissemination of knowledge and research. To fulfil these functions the universities rely heavily on their libraries for the provision and conservation of materials. Therefore, the University Library is the heart of the University. Edoka (2000) opined that in general, the functions of academic libraries are to provide information materials required for the academic programmes of the parent institution, and also provide information resources in consonance with the needs of the faculty and students.

These objectives of university libraries can only be achieved by the selection and acquisition of relevant materials that are built around the courses offered in the institutions. The acquisition of just any library materials is not enough. The librarian has to know whether the right materials are acquired and used. One way of improving collection is by systematic evaluation. The evaluation of library materials is achieved

by finding out the extent of use of these materials. This can be done by compiling the statistics of consulted books and those on the extent of borrowing.

Statement of the Problem

Collection development in academic libraries is undergoing massive changes because of the new information technology and electronic access (Pastine, 1996). For some of the academic libraries in Nigeria to be fully computerised, there is need for libraries to assess their stock. Stocktaking does not only involve checking the list of books, overdue and other routine statistics kept in the circulation section of the library, but it also involves observing the books physically on the shelves to know the condition of the titles. This study aims to find out the proportion of books missing and worn- out in Science and Technology collection.

Methodology

The population of study consisted of titles of materials in Science and Technology section of circulation area of University of Nigeria, Nsukka library. In the Science section, there are 11 classes made of QA – QR classification, while the Technology section has 16 classes of TA – TX classification. The classification is based on the Library of Congress. Five subjects each from Science and Technology were selected The five subjects chosen were those the researchers adjudged to be basic in science and technology, and in which they were particularly interested in. For each subject chosen, a systematic sample of 1-in-20 was selected from the shelf list of subject index cards. This gave a sample size of 351 titles in Science and 220 titles in Technology. Then the titles were physically observed on the shelves using the corresponding call numbers obtained from the selected sample of subject index cards.

Findings

The result of the study is summarised on tables 1 and 2. From table 1, one can easily notice that the percentage of titles observed were more in the sciences with Physics having the highest percentage of 78 among the science subjects. Home Economics topped the list among the technology subjects with a percentage of 68. The subject with the least title observed was Mechanical Engineering, which had 53%, which means that 47% of the titles were not seen.

Table 1: Distribution of Titles Selected, Observed and Worn- out.

Subjects	No. of titles selected	No. observed	Prop. of Seen Titles (%)	Not seen titles	Prop. of Titles not seen (%)	No. worn out	Prop. of worn out titles out of observed titles (%)
Chemistry (QD)	108	79	73	29	27	20	25
Physics (QC)	102	80	78	22	22	23	23
Botany (QK)	33	25	76	8	24	9	36
Zoology (QL)	54	38	70	16	30	18	47
Geology (QE)	54	32	59	22	41	11	34
						11	23
Subtotal for Science	**351**	**254**	**72.4**	**97**	**27.6**	**81**	**31.8**
Civil Engineering (TA)	77	47	61	30	39	11	23
Environmental Technology (TD)	16	9	56	7	44	2	22
Mechanical Engineering (TJ)	30	16	53	14	47	7	44
Electrical/Electronic Eng. (TK)	75	49	65	26	35	14	29
Home Economics (TX)	22	15	68	7	32	8	58
Subtotal for technology	**220**	**136**	**61.8**	**84**	**38.2**	**42**	**30.8**
Total	**571**	**390**	**68.3**	**181**	**31.7**	**123**	**31.5**

The percentage of worn-out books were evenly spread among the science and technology subjects with Home Economics (58%) and Zoology (47%) having the highest proportion of worn out books. The least was Environmental Technology with 22%. Technology had a higher proportion of titles that could not be located on the shelves than Science books. However, titles not seen do not necessarily mean missing. They could be among the mutilated books or books in the bindery.

Stock evaluation also involves finding and identifying obsolete titles. Hence, there was the need to ascertain the proportion of more recent titles on the shelves. Only titles published after 1980 were considered to be recent.

Table 2 shows the distribution of recent titles. It is obvious from the table that the stock of the library was outdated because only a quarter of the collection sampled was published after 1980. Although there were more recent titles in Technology (39.7%) compared with Science (20.5%). Civil Engineering (53.2 %) and Electrical/ Electronics (36.7%) seemed to have the most recent titles among all the disciplines.

Table 2: Distribution of Titles According to Year of Publication (1981-1999)

Subject	Total books observed	1981- 1990 No.	%	1991- 1999 No.	%	Total (1981-1999)	Proportion of recent books (%)
Chemistry	79	15	19.0	6	7.6	21	26.6
Physics	80	5	6.25	6	7.5	11	13.8
Botany	25	2	8.00	1	4.00	3	12.0
Zoology	38	5	13.2	5	13.2	10	26.3
Geology	32	3	9.4	4	12.5	7	21.9
Sub total for science	**254**	**30**	**11.8**	**22**	**8.7**	**52**	**20.5**
Civil Engineering							
Environmental Technology	47	12	25.5	13	27.7	25	53.2
Mechanical Engineering	9	-	-	3	33.3	3	33.3
Electrical/Electronics	16	3	18.8	2	12.5	5	31.3
Home Economics	49	12	24.5	6	12.3	18	36.7
	15	3	20.0	-	-	3	20.0
Subtotal for technology	**136**	**30**		**24**		**54**	**39.7**
Total	**390**	**60**		**46**		**106**	**25.6**

Conclusion

The issue of library stocktaking is an important aspect of librarianship. The aim of this exercise was to find out how current were the publications in the University of Nigeria Library, especially with Science and Technology. The evaluation study revealed that most titles in Science and Technology were outdated. Given the rate of advances in science and technology, the library needs to acquire more recent titles in its collection. Since there was a high proportion of worn- out title, based on our sample study, it is necessary to physically observe all the titles so as to replace the worn-out ones or send them to the bindery for repairs.

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Book Review

Book Publishing in Nigeria by Oshiotse Andrew Okwilagwe. Ibadan: Stirling Horden Publishers, 2001, 245p. ISBN 978- 2063- 28-2. US$ 35 ; N2000

Book publishing is a cultural activity and a peculiar form of business in which a person of average intelligence can effectively operate. Yet, there is a dearth of literature in the diseipline for students, professionals and educationists. It is more so in Nigeria probably because the discipline is relatively young. Dr Okwilagwe, a senior lecturer at the University of Ibadan has blazed the trail by writing this book. His effort is highly commendable.

Book Publishing in Nigeria will satisfy the demand for a textbook for undergraduate courses in book publishing, and to some extent, provide the skills needed by the emergent group of people entering into the book publishing profession. The book aims to expose such people to the nature of publishing and the factors shaping the book publishing industry in Nigeria.

The book is divided into fourteen chapters and the topics were carefully chosen and ordered to provide the reader with a clear understanding of the various aspects of book publishing. Chapter One introduces the reader to a simple definition of publishing and the distinctions between publishing and printing. It also describes the current trends in book publishing and publishing education.

Chapters Two and Three of the book provide some details on book production procedures. Chapter Four highlights the current trends in publishing and professionalism, examining the professional status of publishing. The author goes further in Chapter Five to examine book publishing as a cultural activity, culture binding block, business and a mass media industry. The environment of book publishing in Nigeria is the focus of Chapter Six. The chapter is particularly informative on the roles of non-governmental agencies and international organisations in supporting book publishing in Africa.

Chapter Seven seems to have been written in recognition of the national efforts at solving the problem of book hunger and scarcity in Nigeria. The scenario of government's investments in textbook publishing is provided in Chapter Eight. The author expresses that the efforts seem futile because the infrastructure required for a virile indigenous book industry is lacking in Nigeria.

The author, goes further in Chapter Nine to throw light on legal issues in book publishing in Nigeria. Chapter Ten discusses in great detail, the types and methods of reprography and its importance in library services and education in Nigeria. The author notes that as much as reprography keeps the Nigerian education system functioning, the authors and publishers of such works are the losers. Chapters Eleven to Thirteen focus on copyright administration and violation in Nigerian and the effort of the Nigerian Copyright Commission at curbing copyright infringement. The challenges facing the commission and publishers in general are discussed in detail. The last chapter of the book provides a list of addresses of member firms of the Nigerian Publishers Association. The author suggests in the book that Nigeria needs an informed political will to recognise the role of the book publishing industry and give desired the attention to the industry.

Written in a simple, concise language, devoid of difficult publishing terms, *Book Publishing in Nigeria* has attempted to cover major aspects of book publishing. Although the book has drawn ample examples from the Nigerian scene, it is of much relevance to most African countries. It will therefore be of tremendous value to students of publishing, researchers in book development, library and information professionals and the general public. The book is recommended to libraries of tertiary institutions, publishing houses and students of all library and information science institutions, especially in Africa.

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New Publication

From Conference to Conference: A Bibliography on African Women and Development 1980–1995 by Olufunke A. Oke. Lagos: Rex Charles/Connel Publications, 2001, 395p. ISBN 978- 2137 –63-4. US$20

The book covers the literature on African women between 1980 and 1995. It essentially covers all the literature on African women from the 1980 Copenhagen Conference to the 1995 Beijing Conference. It consists of books, journal articles, theses, unpublished materials and other relevant literature.

The main body of the work is divided into three sections. Section One deals with published and unpublished works, chapters from books, conference reports and papers. Section Two lists only journal and relevant magazine articles. Newspaper articles are deliberately excluded. Section Three lists only theses and dissertations.

This is a valuable book for researchers in the field of women studies. For further information the author can be contacted at oaoke@yahoo.com

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Professional News

Librarians Registration Council Inaugurated in Nigeria

The Nigeria Library Association became a chartered professional body when the registration council was inaugurated in May 2002. The 29-member council is expected to determine who are librarians and what standards of knowledge and skill are to be attained by persons seeking to become registered librarians. The Council is also expected to secure, establish and maintain a register of persons entitled to practise the profession; maintain discipline within the profession; and approve institutions, courses of training and qualification in librarianship and if necessary, withdraw the approval already given.

Professors Appointed University Librarians

Two library school professors have recently been appointed university librarians at the University of Ilorin, Nigeria and the University of Ghana, Legon. Professor M. I. Ajibero, a former Head of Department of Library Science at Bayero University, Kano, Nigeria, was recently appointed the University Librarian of the University of Ilorin, while Professor A. A Alemna, a former of Head of Department of Information Studies, University of Ghana assumed the position of University Librarian at Balme Library, University of Ghana in July 2002. We congratulate both academics and wish them successful tenure in their new jobs.

African Journal of Library, Archives and Information Science Provides a Training Course for Authors

The African Journal of Library, Archives and Information Science with the support of the International Network for the Availability of Scientific Publications (INASP) recently organised a training course on research and writing skills for library, archives and information science authors at the University of Ibadan, Nigeria. The objective of the course was to assist authors to develop and improve on their skills in writing their research work. Full details of the training course will be provided in the next issue of the journal.

Nigeria Library Association Celebrates 40th Anniversary

The Nigeria Library Association celebrated its 40th anniversary with a conference held between 16th and 21st June, 2002 at ASCON, Badagry, Nigeria. The theme of the conference was "40 Years of Library and Information Service to the Nation." Six commissioned papers were presented by distinguished librarians. More than 300 librarians and information professionals attended the conference. The highlight of the conference was the conferment of the Fellow of Nigeria Library Association (FNLA) on Prof. Sam E. Ifidon, Professor of Library and Information Studies, who is also the Dean of the Postgraduate School, Delta State University, Abraka, Nigeria. We congratulate both the Nigeria Library Association and Prof. Sam Ifidon.

Forthcoming Conference

August 1- 9 2003 Berlin, Germany. 69th IFLA Council and General Conference.

Theme: Access point Library- Media- Information—Culture

Sub themes: Transforming media management
Strengthening information context
Guaranteeing human culture and values

For further information contact Ms. Barbara Schleihagen, Secretary General or Christopher Albers, Conference Co-ordinator, IFLA 2003 Berlin Secretariat, c/o Berlin State Library-Prussian Cultural Heritage, Potsdamer Str. 33, D 10785, Berlin, Germany. Email: ifla20003secr@sbb.spk-berlin-de

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AIMS AND SCOPE

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