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An Examination of Digitization Capacity and Skills of Academic Librarians in Nigeria

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----------ABSTRACT----------

Increasing number of Nigerian universities is devising creative means of increasing their digital contents in the public domain by digitizing intellectual outputs of their faculty members. Digitization accords academic institutions the opportunity of making their institutional resources available thereby increasing their visibility and better performance in ongoing web ranking of world universities. However, certain skill sets and competencies are required by librarians who are responsible to establish and maintain digital collections in their respective institutions. This study therefore investigated the level of librarians' possession of these skills. A survey was conducted on librarians in eleven selected private and public universities in Nigeria that have minimum ICT infrastructure required for digitization. Eighty six librarians responded and data analysis revealed that digitization was still at its infancy in the libraries and few librarians were involved in the process. The study also found librarians score themselves below average in many of the specific digitization skills even though they considered them important. Also, majority of the librarians had no formal professional training in digitization and only a few spent time for personal skills development in the process.

Keywords – Digitization, Academic libraries, Capacity building, ICT, Nigeria.

1.INTRODUCTION

Academic libraries are in the lead of digitization initiatives across the globe. Liu (2004) asserts that "most of the libraries involved in digitization projects in the United States were academic libraries." According to an OCLC Research report, "97% of the 169 research libraries in the United States and Canada with special collections have completed one or more digitization projects and/or have an active programme" (Dooley and Luce, 2010). Similarly, Julie Verleyen in a paper presented at a digitization awareness seminar in Lagos, Nigeria in 2012 reported that "since the beginning of the Web and the automation of processes, European institutions such as libraries, research centres, museums, universities, etc. have been running projects to digitize the content they hold."

Although still a novelty in Africa (Kanyengo, 2006), digitization projects and programmes are ongoing in African institutions. Tsebe (2005) identified some of such projects to include:

- The German Colonial Society collections of 55,000 photographic impressions from Africa which was completed in 1999;
- The West African Research Centre completed the digitization of 150 colonial reports in 2002;
- Sabinet online digitized 40 scholarly journals in 2002 and by 2004 another 141 titles were completed;
- The University of Cape Town in cooperation with the National Library of South Africa digitized 345 drawings of the Black collections in 2003;
- Michigan state University digitized ten African journals by 2004; and
- The National Library of Egypt had digitized 100000 pages by 2004.

Nigeria is not left out in the digitization tide in Africa and the world, even though these are rarely reported in literature (Ezeani and Ezema, 2011). Increasing number of university libraries is making efforts to build institutional repositories by digitizing intellectual outputs of their faculty members. A number of such efforts have been reported as success stories of the implementing institutions in library and information science literature. For instance, Akintunde and Anjo (2012) reported the digitization activities of the University of Jos library to become the first institution in Nigeria and second in West Africa to establish an institutional repository in 2009.

Anunobi and Onyebinama (2011) presented the successes recorded by the Federal University of Technology, Owerri in the digitization of theses and dissertations of the institution by the library at the 14th International Symposium on Electronic Theses and Dissertations in

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Cape Town, South Africa. Eke (2011) and Ezeani and Ezema (2011) reported the digitization of local information resources such as undergraduate projects, postgraduate theses and dissertations and other resources. to establish an institutional repository for the University of Nigeria, Nsukka.

There are other digitization initiatives in Nigerian university libraries that might not be articulated in literature. However, the African Library Support Network provides a list of existing and ongoing digitization projects in Nigeria on its website at www.adsln.org.

Digitization is popularized among academic libraries because of the opportunities and benefits which it accrues to them. Digitization accords academic institutions the opportunity of making their institutional resources available thereby increasing their visibility and better performance in ongoing web ranking of world universities. Institutions in Nigeria are devising creative means to increase their digital content in the public domain. This is resulting in more Nigerian content on the internet thus engendering more openness and sharability of institutional resources. This, on the long run, could improve the image of Nigerian universities in the global arena.

Apart from increased visibility, digitization preserves endangered information resources, improves the efficiency of information search mechanisms and improves access to library resources. According to Fabunmi et al (2006) digitizing library collections will:

- make information accessible to all instead of just a group of researchers;
- allow users to search collections more rapidly and comprehensively from anywhere at anytime;
- make the invisible visible;
- allow several users to access the same material at same time without hindrance;
- remove the problem of distance, as users do not have to travel to libraries to possess the hard copies.

In the words of Akintunde and Anjo (2012), the benefits of digitization are further summarized thus:

> Digitization holds the advantage of providing a platform for sharability and duplicity of data and networking because of the digital form of content. It also enhances the life-span of records as well as securing data and records that would have been obliterated due to their age. So, the old practice of librarians in selective dissemination of information can be done more conveniently in a digital environment by merely touching computer keys and icons, because automatic indexing and semantic relationships are carried out in the design of different software for managing digitized content.

Although the aim of this paper was not to join the debate on definitions of digitization, it will worth the while to mention some common ideas advanced in literature to explain the concept. This is necessary in order to put into focus the scope of the present study. Digitization has been defined as "the representation of an object, image, sound, document or a signal by discreet set of its points and samples" (Wikipedia). Fabunmi et al implied digitization as "conversion of documents and art works into digital images." The National Library of Australia defined digitization as "a process of creating digital surrogates of analog materials from the library's collection".

Obviously, all the definitions agreed to one point that digitization is a change process. It is the process of changing from paper format to electronic/digital format and this is the perspective that this study adopts.

Digitization as a process involves various but systematic stages. The Information Management Resource Kit (IMARK) training manual articulates these stages in a model that usually forms the framework for most digitization projects. The framework is depicted in Fig. 1 below.

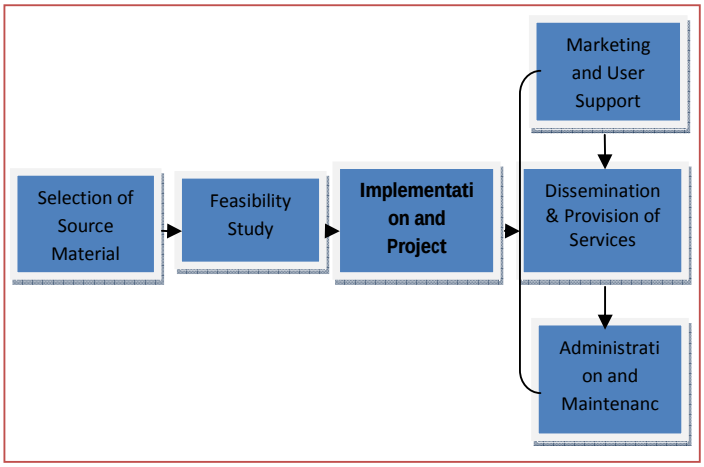

Figure 1: Key Elements in Digitization (Source: IMARK Training Manual)

Each element of the digitization model requires certain skills sets and expertise to implement. Therefore,

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librarians need to build appropriate capacity in order to achieve successful implementation of digitization projects and reap its full benefits in their libraries.

Many researchers have suggested core competencies and skills sets needed to perform the role of digital content management. In addition to the traditional library skills and knowledge, today's librarians are expected to possess additional knowledge and skills required for work within the digital information world.

At the National Conference on Recent Technological Trends in Management and Library System held in New Delhi, India in 2008, Natarajan and Bhakta identified three main areas of expertise required in digitization projects to include: management, technical and subject skills. In a similar vein, Cassella and Morando (2011) categorized the skills required by librarians into five namely: communication, management, technical, collection development and metadata creation and intellectual property rights negotiation skills. These skills are interwoven and overlapping in description and implementation (Natarajan and Bhakta, 2008).

Skilled personnel are a major requirement for digitization projects (Fatoki, 2005 & Masakazi, 2009). Alegbeleye (2009) and Shibanda (2001) noted that lack of skilled manpower is a major challenge militating against digitization projects in Africa. In line with this observation, Igun (2006) had noted that "the training of librarians for digital operations and services in Nigeria is inadequate and needs radical restructuring to produce librarians suited to deliver service in digital libraries in a knowledge-based society."

Library and information science literature has reported some notable achievements of some Nigerian university libraries to implement digitization initiatives (e.g. Eke, 2011; Ezeani & Ezema, 2011; Fabunmi et al., 2006) Majority of these scholarly works only mentioned the step-by-step approaches implemented by the libraries to establish digital repositories for their institutions. However, none of the works attempted to investigate the skills sets and competencies possessed by academic librarians in Nigerian universities. This is the gap the present study attempts to fill.

1.1. Objectives of the Study

The main objective of the study is to investigate the level of competencies and skills sets possessed by academic librarians in Nigerian universities to implement digitization projects. This broad objective is streamlined to four specific objectives below:

1. to investigate librarians' level of involvement in digitization projects of their institutions;
2. to explore the importance attached to digitization skills acquisition by librarians;
3. to ascertain librarians' capability with digitization skill sets;
4. to know librarians' efforts towards building capacity for implementing digitization projects.

The study is an attempt to report the strengths and weaknesses of academic librarians with respect to digitization and digital content management. The aim is to assist library management to realize the need to formulate and implement policies that would promote training and re-training of library and information professionals in order to build capacity for successful implementation of digitization projects. Achieving this, promises to project the visibility and attractiveness of Nigerian universities in the public domain.

2. METHODOLOGY

A survey method was adopted for the study. The target audience was the entire librarians working in eleven selected university libraries in southwest Nigeria. The libraries were selected because, on one hand, they have minimum required information and communication technology (ICT) infrastructure for digitization projects. On the other hand, they were selected because of their proximity to the author's base, hence very convenient to reach and observe.

This study defines "librarians" as any library personnel that holds a degree in library and information science and/or related field acceptable to the Nigerian Library Association from any accredited institution in Nigeria or overseas. The study considered the entire librarians as participants because personal experience had shown that academic librarians in Nigeria do not usually have job specializations. They are often rotated from one unit/section of the library to the other until one attains the headship position. This makes it difficult to identify individuals with specific skills.

A three part questionnaire adapted from Cassella and Morando (2011) was used to capture data for the study. Part A focused on the education and professional background of respondents. Part B contained 14 items that bothered on 5 professional skills required for implementing digitization projects. The skills were communication (4 items), management (4 items), technical (4 items), copyright issue management (1 item), and collection and metadata management skills (1 item). The skills were described for respondents to rate how

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important they considered them on a 4 point scale (0= not important to 3= most important). Part C requested the participants to score themselves on the 5 professional skills in Part B in order to assess their capacity to implement and manage digitization projects on a 10 point scale. (Lowest = 1; highest = 10).

In order to draw necessary conclusions and inferences, the collected data was analyzed using appropriate sub-programmes of the Statistical Package for Social Scientists (SPSS). The results are presented in simple frequency tables and other descriptive statistics.

3. RESULTS

3.1. Demography

Eighty six copies of the questionnaire were retrieved from the eleven academic libraries studied, 50 and 36 from public and private universities respectively. This response pattern was justified because government is the major employer of labour in Nigeria.

Of the surveys returned, there were more females (47: 54.7%) than males (39: 45.3%), thus reflecting the outlook of librarianship in Nigeria where there are more female practicing librarians than males. In terms of highest academic qualification, majority of the participants held Masters Degree (78%) in librarianship and related information professions including archives and records management, information science and publishing.

More of the respondents were on the lower rungs of the ladder of academic librarianship as about 72% were in cadre of librarian 1 and below. Only 23% were senior librarians and above while the remaining 5% did not indicate their job status.

3.2. Status of digitization in the academic libraries

As expressed by majority of the respondents, the eleven libraries had at least one digitization project or the other. However, the author observed that in many of the libraries respondents erroneously considered digitization as the computerization of their library catalogues through the instrumentality of the various library management software installed.

There were also ongoing deliberate attempts towards digitization of library resources in the selected libraries. For instance, among the private universities, two had a digital collection of past examination questions of their institutions and one of them had the collection accessible online. In the case of public universities, all the federal government owned universities were building institutional repositories by digitizing documents emanating from the institutions such as lecture notes, seminar papers, theses and dissertations, technical reports, laboratory manuals and handbooks. But many of these efforts were observed to be at the infant stage because majority of the projects were between 1 and 3 years old as at the time of this study.

3.3. Librarians' involvement in digitization

The respondents were asked to indicate if they were involved in digitization projects in their libraries and only 29 answered in the affirmative. Similarly, 21 reported the period they had been involved in the project and mean number of years was 2.67 years (SD=1.906). This supported the observed infancy of digitization in the libraries.

Furthermore, the librarians were requested to name the digitization software used in their libraries and only 30 respondents said they used one or the other. D-Space was named by 16 respondents while only 4 indicated Greenstone. About 5 respondents working in the same library claimed it was 'Rack-to-Filer' software which the author was not familiar with. It was also interesting to note that 14 out of the 30 respondents listed library management software such as Koha and VTLS and even a word processing application namely; Microsoft Word as digitization software.

3.4. Importance attached to Digitization Skills by Librarians

On the importance they attached to digitization skills, the table below shows their responses.

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Table 1: Importance attached to Digitization skills by Librarians

Digitization skills sets	Importance attached to skills		
	N	Mean	SD
Communication skills	**74**	**2.0721**	**0.64303**
Abilities to communicate and promote digital content to faculty, research communities and administrative units.	74	2.0946	0.84673
Abilities to manage liaisons and to communicate with the institutional leadership.	74	2.1216	0.72059
Abilities to communicate and promote digital content to external stakeholders.	74	1.9730	0.73973
Abilities to plan and develop institutional advocacy program in order to support digitization activities.	73	2.1096	0.77391
Copyright skills Abilities to manage intellectual property rights issues in the digital environment.	74	2.0405	0.76640
Management skills	**74**	**1.8840**	**0.67922**
Project management abilities.	73	1.8630	0.75120
Abilities to plan digitization activity workflow	74	1.8108	0.78820
Abilities to coordinate and manage human resources and teamwork.	74	1.9595	0.88270
Abilities to plan a budget	73	1.9054	0.89395
Technical skills	**74**	**1.8547**	**0.74370**
Abilities to deploy and manage digitization software	74	1.9730	0.84356
Abilities to implement interoperability standards and protocols	73	1.7123	0.90492
Abilities to customize digital content web pages (layout, design)	74	1.8283	0.89685
Abilities to plan and develop digital collection	72	1.8889	0.84845
Metadata creation skills Abilities to select and use meta-data sets (Dublin core, MARC, METS, LOM, PREMIS, etc	74	1.9595	0.91321

As shown in Table 1 above, librarians attached more importance to communication skills (mean=2.0721; SD=0.64303), and this was closely followed by copyright skills (mean=2.0405; SD=0.76640). Technical skills were not considered as of utmost importance by the respondents. This might be due to the emphasis on advanced computer technology in which many librarians in Nigeria are not well-grounded.

3.5. Librarians' capability with Digitization Skills sets

In order to ascertain the capabilities of the librarians to display the skills referred to above on their job, they were asked to score themselves between 1 and 10. Table 2 below reports the mean score of the respondents on each of the skills sets.

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Table 2: Librarians' Capacity to Implement and Manage Digitization Projects

Digitization skills sets	Capability scores		
	N	Mean	SD
Communication skills	**76**	**4.8388**	**2.80259**
Abilities to communicate and promote digital content to faculty, research communities and administrative units.		4.8947	2.96459
Abilities to manage liaisons and to communicate with the institutional leadership.		4.9605	2.88648
Abilities to communicate and promote digital content to external stakeholders.		4.6842	2.89924
Abilities to plan and develop institutional advocacy program in order to support digitization activities.		4.8158	3.02307
Copyright skills Abilities to manage intellectual property rights issues in the digital environment.	**76**	4.9868	3.12194
Management skills	**76**	**5.2610**	**2.88403**
Project management abilities.		4.9868	3.13047
Abilities to plan digitization activity workflow		4.8904	3.16035
Abilities to coordinate and manage human resources and teamwork.		5.6579	2.97345
Abilities to plan a budget		5.4079	3.14188
Technical skills	**76**	**4.4243**	**2.96146**
Abilities to deploy and manage digitization software		4.5467	3.23533
Abilities to implement interoperability standards and protocols		4.4400	3.14617
Abilities to customize digital content web pages (layout, design)		4.2105	3.07383
Abilities to plan and develop digital collection		4.5658	3.19306
Metadata creation skills Abilities to select and use meta-data sets (Dublin core, MARC, METS, LOM, PREMIS, etc	**76**	4.3553	3.05376

The mean scores for each of the digitization skills revealed that librarians possessed limited capabilities for implementing digitization projects. Except for management skills, respondents scored themselves below average on the ten-point scale used to assess their capabilities, the least being metadata creation skills. Similar to the result on the importance attached to digitization skills, respondents scored themselves low on the items of technical skills capabilities.

3.6. Librarians' efforts towards building capacity for digitization

The study also sought to know the efforts librarians make to build capacity for digitization. As shown in Fig. 2, majority had no formal training in digitization or management of digital collections. Moreover, the librarians were asked if they spent time on self training in digitization on a daily basis. Fig. 3 showed that many of the respondents never spent time for self skill development in digitization.

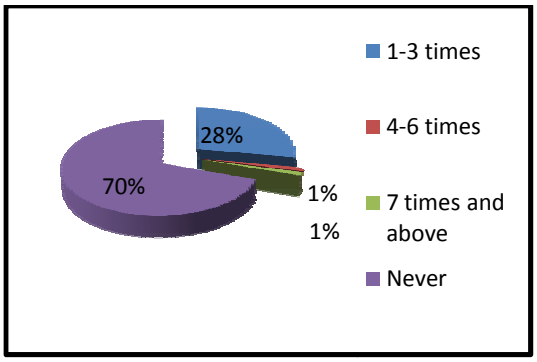

Figure 2: Professional Training in Digitization

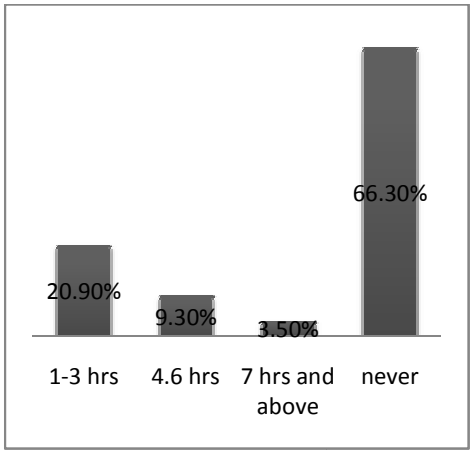

Figure 3: Time spent per day for self training in Digitization

4. DISCUSSION

This study has revealed that digitization was still at the infancy in Nigeria which supported Kayengo's (2006) assertion. Therefore, more efforts should be made by organizations concerned about digitization of world knowledge such as United Nations Educational Scientific & Cultural Organization (UNESCO), International Conference on African Digital Libraries & Archives ICADLA) and others to create awareness among librarians and libraries on the benefits of digitization through workshops, seminars, trainings, symposia and other sensitization approaches. ICADLA's effort at organizing conferences on digitization in Africa is recognized and commendable. However, such conferences could be organized locally to allow librarians who might not be able to afford the cost of overseas trips. It is worthy to note and commend the activities of *NetLibrary* Nigeria at creating awareness about digitization among library institutions in Nigeria. The author attended one of such awareness campaigns in April 2012 at Lagos.

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Top management support is a major critical success factor in any ICT-based project such as digitization. Therefore, planning and execution of digitization awareness and enlightenment campaigns should involve heads of academic library and institution in order to attract policy and budgetary supports that are crucial to a successful implementation of digitization projects.

Another major finding of this study was that few librarians were involved in digitization in their respective libraries. This might stem from the fact that academic librarians have no specialization in Nigeria because they were rotated from one unit of the library to the other from time to time. Therefore, only those who were in the digitization unit at a particular time would be involved in the project. In order to assuage the situation, heads of library could modify this practice by involving every professional librarian in their institutions at least at the digitization planning stage. This approach could encourage participants to volunteer ideas that could further make the project formidable and sustainable.

Digitization requires a combination of skills (Fatoki, 2005); however, this study found that these mix of capabilities were lacking among academic librarians in Nigeria. This was evident in the fact that they scored themselves below average in many of the specific digitization skills even though they considered the skills important. This corroborated Alegbeye's (2009) assertion that skilled manpower is a major challenge to digitization in Africa. The findings of the study further revealed that majority of the librarians had no formal professional training in digitization and only a few spent times for personal skills development towards the process.

5. CONCLUSION

Digitization is becoming more popular among university libraries owing to the immense benefits accruing to implementing institutions. However, a combination of skills required for a successful implementation of digitization were found to be somewhat lacking among librarians in Nigerian university libraries. This was attributed to the fact that digitization was still at the infant stage in Nigeria and because only a few librarians had received formal professional training in digitization. Consequently, many librarians had difficulty to differentiate between library automation and digitization, let alone being involved in it. From the fore-going, it was recommended that:

- more efforts should be made by concerned local and international organizations to promote the opportunities and benefits of digitization to the university library and scholarship;
- management of university libraries and institutions should be involved in digitization awareness and promotion campaigns in order to attract policy and budgetary supports;
- librarians at all levels irrespective of department of work should be involved in planning and implementation of digitization projects;
- librarians should be sponsored to attend local and international workshops, conferences, trainings and seminars specific to digitization in order to acquire the required skills; and
- university library environment should be designed to enable and support self training and personal skill development of librarians.

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Autobiography

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