opción

Revista de Antropología, Ciencias de la Comunicación y de la Información, Filosofía, Lingüística y Semiótica, Problemas del Desarrollo, la Ciencia y la Tecnología

Planning for a successful digitization of library material: A theoretical perspective

Bongiwe C. Nyide[1]
[1]University of KwaZulu-Natal
Graduate School of Business and Leadership
global@ores.su

Wellington B.[2]
[2]University of KwaZulu-Natal
Westville Campus, Durban, South Africa
info@ores.su

Zondi B.[3]
[3]University of KwaZulu-Natal
Westville Campus, Durban, South Africa
zondiw@ukzn.ac.za

Abstract

This paper aims to plan a successful digitization for academic, public or special libraries with the aid of a survey method as a descriptive research method.It is clear that when embarking on a digitization process a lot has to be taken into account over and above the financial resources. The people involved in the management of the process must identify the material to be sourced and digitized, they must know who is likely to use the material. Also, it is important to look at the qualities and capabilities of the staff that will be involved in the digitization process/project.

Keywords: digitization, libraries, physical, digital.

Planificación para una digitalización exitosa del material de biblioteca: una perspectiva teórica

Resumen

Este documento tiene como objetivo planificar una digitalización exitosa para bibliotecas académicas, públicas o especiales con la ayuda de un método de encuesta como método de investigación descriptivo. Está claro que al embarcarse en un proceso de digitalización se debe tener mucho en cuenta además de los recursos financieros. Las personas involucradas en la gestión del proceso deben identificar el material que se debe buscar y digitalizar, deben saber quién utilizará el material. Además, es importante observar las cualidades y capacidades del personal que participará en el proceso/proyecto de digitalización.

Palabras clave: digitalización, bibliotecas, física, digital.

1. INTRODUCTION

Digitization projects are becoming popular within libraries, whether academic, public or special libraries. Libraries are either engaging in retrospective digitization by digitizing previously acquired hard copies, or are building up digital libraries or institutional repositories by submitting electronic copies to the repositories. Digitization of library materials, thusplays an essential role in promoting the visibility and accessibility of materials. Evans (2006)

revealed that a number of academic institutions such as the University of Pretoria, University of the Free State, Rhodes University, and many others, have embarked on the digitization of their library materials such as theses and dissertations submitted by their students. This paper hopes to provide a theoretical perspective of what needs to be done for a digitization of library material project to be successful.

2. THE MEANING OF THE DIGITIZATION OF LIBRARY MATERIALS

Chan and Costa (2005) pointed out that "one of the key roles of a library is to provide structured access to information" and with the increasing reliance on technology, libraries are engaged in digitizing their materials as one of the methods for providing access to information.Hazen et al. (1998) explained that digitization of library materials involves the conversion of textual, visual and numeric information in electronic form. This includes preparation and conversion to presentation and archiving. The digitization process involves a number of different procedures and technologies which are costly and have complications. According to Bulow and Ahmon (2011), digitization not only involves "image capture, transcription, indexing and delivery, but also technical issues around online presentation, digital file management and digital preservation". Jagboro et al. (2012) pointed out that libraries worldwide, especially university libraries, are increasingly becoming digitally conscious. Like Rafiq and Ameen (2013) pointed out that academic libraries all

over the world are digitizing their materials, ranging from "books, journals, archives of newspapers, artifacts, music, theses and dissertations, and other historical documents and images of international and cultural interest."

3. BENEFITS OF DIGITIZATION

According to IFLA (2002), there are a number of reasons for implementing digitization projects, which benefit users in one way or another. Jagboro et al. (2012)stated that libraries digitize their materials for various reasons, such as providing wider access to collections, as a way to preserve aging materials and also to allow users to "search collections rapidly and comprehensively from anywhere at any time". Jagboro et al. (2012)added that, in developing countries, digitization helps to prevent theft of library materials where libraries do not have electronic security systems as preventive measures. According to Bulow and Ahmon (2011), while the digitization of library materials has a number of benefits, it has also "put new pressures on libraries, archives and museums." Bulow and Ahmon (2011)addedthatlibrary users, especially the new generation born in the internet age, "expect to find and retrieve information online", as they are not used for retrieving information using catalogues. Alhaji (2007) identified four benefits that digitization of library materials bring:

- Improved access. Alhaji (2007) pointed out that digitization of library materials contributes to improving accessibility, since

the digitized material can be accessed at any time, regardless of where the physical library is and whether it is open or closed Jagboro et al. (2012)agreed that "users can access the library's digitized resources from their offices and halls of residence, even when the library is physically closed." Access to digitized content is not tied to its physical location nor operating hours.

• Wider access. Alhaji (2007)argued that a physical copy of a document is only available where it is located, which means if there is one copy then one person at a time can access it. Jagboro et al (2012) pointed out that digitization of library materials provides wider access to materials by making them available electronically. According to Alhaji (2007), as well as Jagboro et al (2012), digitized content can be simultaneously accessed by as many people as possible, something which is not possible with text resources.

• Improved information sharing. According to IFLA (2002), digitization gives institutions an opportunity to partner with other institutions and share resources. In support ofIFLA (2007),Alhaji (2007)added that, by digitizing library information, digitized libraries are able to share information among themselves, provided they have appropriate metadata and information exchange protocols.

• Improved preservation. Alhaji (2007)warned that physical library materials are prone to wear and tear and canthe library communities, yet that is not always the case with digitized material. IFLA (2002) indicated that digital technologies offer

opportunity to preserve the original by giving access to a digital surrogate. However, according to Alhaji (2007) that did not mean the digitized material cannot be damaged, but it is less likely to be damaged and should it be damaged it is easy to make an exact copy from the original. Digital copies are sometimes exposed to computer viruses and can be corrupted. Asogwa and Ezema (2012) agreed that viruses and disasters can damage the digitized material.Nsibirwa (2012) provided other factors that can cause deterioration of library material, such as environmental factors, including the building in which the materials are kept. These causes of deterioration were emphasized by Nsibirwa in the discussion of the deterioration of physical copies, but it could be argued that this is equally applicable to digitized copies as well. Even though some libraries digitize materials to preserve them, IFLA (2002) argued that digitization is not a solution to the preservation and is also not a cheaper, safer or more reliable way to preserve materials than microfilming.

4. PRINCIPLES OF DIGITIZATION

Although the principles of digitization that are discussed in this section wereformulated by the Committee of the Canadian Council of Archives in 2001, they are relevant to all digitizing institutions. According toAsogwa (2011) these principles are:

- The process of digitization must not place original records at risk of damage from handling or use.

- The original analogue document or a digital version must always be kept.

- Records to be digitized should be chosen only after a careful selection process.

- The technological approach to digitization must satisfy project objectives and must accommodate the characteristics of the records, such as the principle of provenance or the sanctity of the original order.

- Search tools are an essential part of a digitization project and must meet the needs of users.

5. FACTORS TO CONSIDER IN THE DIGITIZATION PROJECT

According to Hazen et al (1998), the factors to consider in a digitization project include:The intellectual and physical nature of the source materials; the number and location of current and potential users; the current and potential nature of use; the format and nature of the proposed digital product and how it will be described, delivered, and archived; and projections of costs in relation to benefits.

6. The intellectual and physical nature of the source materials

Hazen et al (1998)stressed that when making a decision to engage in a digitization project, it is very important to carefully look into the type of materials being digitized. The authors emphasized the

fact that digitization is very expensive and the intellectual value and physical nature of the materials need to be considered to determine whether or not digitizing those materials is worth the money and time that would be spent on them.These authors are of the view that by digitizing materials the institution is making them easily accessible for further research and, as a consequence, materials with scholarly value and intellectual output are more worth digitizing than less valuable materials. Hazen et al (1998)agreed that the library may decide to digitize materials that are "of immediate and curricular importance."

The number and location of current and potential users.According to Hazen et al (1998), not all scholarly materials are heavily used. Some are always used and others are hardly used. Jagboro et al (2012)stated that the choice of materials to be digitized may include materials that are in high demand by patrons and only available in limited numbers, or restricted in access. Hazen et al (1998)reasoned that digitization resources may be selected according to the frequency of the usage of the materials, notwithstanding the fact that the hardly used materials become more frequently used.Hazen et al (1998)felt that material that was previously in hard copy can entice new users who otherwise would not have known about it had it, not been digitized.

Hazen et al (1998)further pointed out that academic institutions usually have more than one campus located very far from each other and, in such cases, materials are sometimes available on one of the

campuses and not available on another, and yet are equally relevant for both or all campuses. The authors statedthat, by digitizing the materials, all potential users have equal opportunity to access the materials, including external users in the case where the material is open to access by outsiders.

The current and potential nature of use. Hazen et al (1998)cautioned that materials can be digitized because of their nature and some materials are too sensitive and fragile for handling. As a result, their usage is limited to avoid damage to the material, regardless of the value of the information contained in them. Hazen et al (1998), however, felt that digitizing such materials would add value to research and scholarly needs, as they would be equally accessible to everyone, anywhere and anytime.

The format and nature of the proposed digital product.According to Hazen et al (1998), the nature and format of the materials for digitization also counts,and it would be important to check if the library has the means to deal and cater for the type of materials to be digitized. According to Hazen et al (1998), the original material must be converted to electronic version satisfactorily.It is thus important to know what features are critical for the material to be effectively digitized, because digitizing certain materials without such considerations would be a waste of time and money, as they would not be as effective and meaningful as the original copies. Hazen et al

(1998)warned that, if the digitized copy does not meet users' needs, it is as good as not being there and users would resort to the hard copy.

Projections of costs in relation to benefits. Hazen et al (1998)revealed out that digitization costs differ greatly from one project to another, from one document type to another, and that it is very important to determine that the benefits of digitized materials are worth the cost and time involved. Hazen et al (1998) also suggested that costs are to be determined in relation to the file sizes and processing of the end-product, labour requirements, accessibility and search ability of the end-product. This means that 15 years ago, as pointed out by Hazen et al (1998), all digitization projects were regarded as costly. In recent years, as stated by de Vries (2009), digitization projects are classified as low cost or high cost based on the duration of the project. According to de Vries (2009), projects that run for a relatively short period of time, for example, two to three years, are regarded as low cost digitization projects. Hazen et al (1998) argued that there is no need to digitize information that would not be used, for example due to its size and poor quality, simply because the cost involved would outweigh the benefits.

7. PHASES OF DIGITIZATION

Bulow and Ahmon (2011) summarized four phases of digitization as important phases to consider from the beginning to the

end of the project, in order to meet the objectives of preserving and increasing access to a collection.

According to Bulow and Ahmon (2011):

- Phase 1 involves the selection of materials to digitize. Copyright issues need to be considered, as they may be the deciding factor whether it is worth digitizing those materials or not. This phase also includes deciding on the scanning preparations of the document.

- Phase 2 concernsrecording the scanned image, the creation of metadata, quality control and Optical Character Recognition.

- Phase 3 concerns information for online presentation. This includes website development, marketing and promoting the end-product.

- Phase 4 covers sustainability and involves the maintenance and long-term financing of the project.

8. BEST PRACTICES AND PLANNING FOR DIGITIZATION PROJECTS

According to Bulow and Ahmon (2011), "the key to successful digitization is collaboration, planning, preparation and presentation." Different authors and academics, such asHirwade (2011),Kanyengo (2009)have suggested a number of requirements that need to be met for the successful implementation of a library digitization project. For example,Hirwade (2011) proposed the three requirements for implementing the library digitization project, namely, the provision of

policy guidelines, the required infrastructure and training of people involved. In addition to the three requirements, Kanyengo (2009) stipulated technical knowledge, financial and legal issues. Hammond and Davies (2009) focused on a number of issues identified from different digitization projects.

In line with the DCC Curation Lifecycle Model, Bell and Natale (2012) recommended selection, standards and access as the key components for a digitization project. According to the Bell and Natalie (2012), digitization projects are complex, time-consuming and costly and their success is generally in proportion to the time spent in planning the project.

9. PLANNING PROCESSES FOR A DIGITIZATION PROJECT

Bell and Natale (2012) highlighted planning as the most important key to a successful digitization project. Bell and Natalie (2012) reasoned that the success of a project is generally in proportion to the time spent on planning the project. Bulow and Ahmon (2011) stressed out that digitization projects must be carefully planned, "to ensure that all requirements and opinions have been considered." Bulow and Ahmon (2011) felt that planning ahead and anticipating possible problems before the start of the project is far better than rectifying problems during the project, a process which is costly and time-consuming.According to Beagrie (N.d.:Getting it right first time), the initial planning stages are crucial to the success of digitization

projects. Beagrie (N.d.:Getting it right first time) emphasized that decisions made at this stage play a critical role in determining the sustainability and usefulness of resources created. The planning processes for the digitization project need to be done from the beginning of the project right to the end.

Alhaji (2007) stated that "planning involves identifying various tasks related to creating a digital library collection, developing strategies for handling these tasks, identifying required resources and formulating a timeline for accomplishing these tasks."

Hammond and Davies (2009) addedthat the planning processes and costing for the digitization project are usually guided by the funding body requirements.According to Beagrie (N.d.:Introduction), even though most organizations are guided by external funding bodies, the most successful digitization projects "have had a well-established wider context, thought through the issues, and have therefore achieved the greatest impact". Hammond and Davies (2009) recommended that the more knowledge you have about the materials to be digitized the better, as you will be able to plan the project better. In a case where you have a poor knowledge of the materials to be digitized, it may end up costing you more and may take longer to complete the project than anticipated, "or you may not be able to digitize all of the content you had hoped to".

Beagrie (N.d.:Introduction) cautioned that "the initial planning and implementation phases of a digitization project are widely recognized as being crucial to its eventual success". Most of the decisions made at this time will determine the future sustainability and usefulness of the resources created. Beagrie (N.d.:Getting it right first time) added that, because of this, most projects recommend a holistic lifecycle approach, "in which all stages from data creation to future use and interdependencies between them are considered." According to Ubogu (2010), the planning must be reviewed now and then, "to reflect new ideas and changing conditions within the library and its environment."

Implementation.Alhaji (2007) statesthat planning is followed by implementation. The implementation process refers to the actual steps required to set up the collection. Alhaji emphasized that, before the implementation of the project, it is crucial "to obtain management approval for the plan and the required resources before proceeding with the implementation" (Alhaji, 2007). As one of the important initial steps, it is important to identify and designate a project manager to lead the implementation of the digital project from the beginning, and, according to Alhaji (2007), for large digital library projects, it is essential to have a full- time project manager for the duration of the project.

Organizational support.Hammond and Davies (2009) pointed out that organizational support is one of the crucial aspects for the

success of the digitization project. Hammond and Davies (2009)warned that the digitization process does not only involve library as a unit, but involves other departments such as Information Technology (IT) for IT-related issues, Human Resources (HR) for staff recruitment and other staff-related matters and a Legal Department for copyright and other legal issues.According to Hammond and Davies (2009), internal organizational bureaucracy is usually considered as one of the most problematic issues, since it deals with a number of departments and it usually takes longer than anticipated to get things done. It is therefore important to engage in negotiations as early as possible, as this process is very time-consuming.

Digitization strategy and policies.Liu (2004) recorded that more and more libraries are digitizing their collections. As a result, policy concerns and technology problems surrounding digitization are becoming very important. Liu (2004) felt that many of the libraries digitizing their collections seem not to have strategies and policies in place. According to Liu (2004), the Institute of Museum and Library Service survey report in 2001 suggested that "libraries need to implement policies regarding the standards, preservation, and selection of digitized material". reported that development of digitization policies, strategy frameworks and standards are some of the challenges commonly faced by libraries and archives engaged in digitization projects.

Guidelines for the drafting of the digital strategy.Layton (2011) provided guidelines to the drafting of the digitization strategy as a set of minimum information elements, to include:

- Know what you have
- Know your users
- Determine your selection principles and rules
- Describe the digital items and collections

For example, when Layton (2011) talks about know what you have, he is stressing that it is important to know the type of collection you have, to understand what the threats are to the collection and what needs to be prioritized. This includes the usage of the collection, how often it is used and what the risks are to damage and loss of items in the collection. The frequently used items can be identified as priority.Layton (2011) recommended that the strategy must highlight and include the issue concerning rights; "what rights are held by who and how these rights are to be managed?"

By knowing your users, Layton (2011) meant knowing your users makes it easy to understand their needs and decide how digitization of specific materials will benefit them, as well as how to present it to them. Beagrie (N.d.:User needs) stated that understanding user needs can be essentialin developing a digitization strategy.

By determining your selection principles and rules, Layton (2011)meant that the fact that digitization of materials is expensive, in

as far as time, financial and human resources are concerned, the digitization strategy must set up rules to determine what and how to go about digitization within the selected collection. Layton (2011) cautioned that it may not be possible to digitize everything within the collection and different rules may be set for different collections and institutions, as the strategies and policies are not a "one size fits all" kind of thing.

By describing the digital items and collections, Layton (2011) meant thatit is important to clearly specify the format, media and metadata to use for the collection. The strategy must specify in which repository the digital collection will be housed.

There are other important aspects raised by other authors, for example:

-availability of specialized staff.According to Moodley (2009), "librarians and archivists need to possess unique skills to work in the digital information world." Recently, libraries are witnessing a high demand of positions that require advanced skills in information technology. Tammaro (2007)recorded that the labour market in Europe is now beginning to demand specialized skills, but there is a serious shortage of such skills, mainly due to the lack of formal (and informal) opportunities for education in IT profiles that are suited to libraries. Hammond and Davies (2009)stated that projects usually require staff with specialized backgroundswho will be competent and engaged in

the projectmanagement of collection and selection of digital materials.According Hammond and Davies (2009), "all academic institutions that are planning and implementing digitization projects confront issues related to selecting collections for digitization." The decision on the selection of a collection to digitize is crucial in any digitization project, as it has an impact on the future and use of the digitized collection. Hammond and Davies (2009)stated that the success and efficiency of a project will suffer if the wrong selection choice is made.

10. CONCLUSION

It is clear that when embarking on a digitization process a lot has to be taken into account over and above the financial resources. The people involved in the management of the process must identify the material to be sourced and digitized, they must know who is likely to use the material. It is also important to address the issue of content to be digitized including its physical characteristics since that impact on the methods used to capture it, the preparation time required and ultimately the cost of digitizing the material. It is important to the leader of the project to look at the qualities and capabilities of the staff that will be involved in the digitization process/project. Copyright issues are extremely important in the digitization project or process. There are other issues that are important for example, network

connectivity. Some institutions are in rural areas where connectivity is a bit of a challenge. The digitization project leader also has to be aware of the degree of security available within the institution, this also talks to storage issues and access management services.

REFERENCES

ALHAJI, I. 2007. **Digitization of past question papers, dissertations and theses: a case study of 30 Nigerian university libraries.**The International Information and Library Review.Vol. 39. N°3: 228-246. http://www.sciencedirect.com/science/article/pii/S105723170700 0367. Accessed 11 June 2013. UK.

ASOGWA, B. 2011. **Digitization of archival collections in Africa for scholarly communication: issues, strategies, and challenges.** University of Nigeria. Nsukka: Library Philosophy and Practice. http://unllib.unl.edu/LPP/. Accessed 12 November 2013.Nigeria.

ASOGWA, B.,&EZEMA, I. 2012. **The challenges of preservation of archives and records in the electronic age.** Pacific Northwest Library Association (PNLA) Quarterly.Vol. 76. N°3:115-125. http://connection.ebscohost.com/c/articles/76600087/challenges -preservation-archives-records-electronic-age. Accessed 11 June 2013. USA.

BELL, L.,&NATALE, J. 2012. **Best practices and planning for digitization projects.** OCLC Webjunction.http://www.webjunction.org/documents/webjuncti on/Best_Practices_and_Planning_for_Digitization_Projects.html . Accessed 12 November 2013. USA.

BULOW, A.,&AHMON, J. 2011. **Preparing collections for digitization.** Facet publishing.London. UK.

CHAN, L.,&COSTA, S. 2005. **Participation in the global knowledge commons: challenges and opportunities for research**

dissemination in developing countries. New Library World.Vol. 106. N°: 120:141-163. http://www.emeraldinsight.com/doi/full/10.1108/030748005105 87354. Accessed 13 June 2013. UK.

DE VRIES, R. 2009. **EIFL Case studies on low cost digitization projects.** Final report. http://www.eifl.net/system/files/201101/low-cost-digitization-report.pdf. Accessed 18 March 2013. South Africa.

EVANS, N.,& MERSHAM, G. 2006. **Analysing electronic theses and dissertations (ETDs) in South Africa.** Paper presented in ProLISSA [Progress in Library and Information Science in Southern Africa] Conference [held at University of South Africa. Pretoria. 1-3 November 2006.] http://www.lis.uzulu.ac.za/2006/evans&mersham.pdf. Accessed 01 October 2013.South Africa.

HAMMOND, M.,&DAVIES, C. 2009.**Understanding the costs of digitization: detail report.** http://www.jisc.ac.uk/media/documents/programmes/digitisatio n/digitisation-costs-full.pdf. Accessed 14 June 2014. UK.

HAZEN, D., HORRELL, J.,& MERRILL-OLDHAM, J. 1998. **Selecting research collections for digitization.** Council on Library and Information Resources. http://www.clir.org/pubs/reports/hazen/matrix.html/pub74.html. Accessed 13 August 2013. USA.

HIRWADE, M. A. 2011. **Digitization of Theses and Dissertations: Status Quo India.** Proceedings of the 14th International Symposium on electronic theses and dissertations. Cape Town.South Africa.

IFLA. 2002. Guidelines for digitization projects for collections and holdings in the public domain. particularly those held by libraries and archives. Preservation and conservation section. http://www.ifla.org/VII/s19/sconsv.htm. Netherlands.

JAGBORO, K., OMOTAYO, B.,& ABOYADE, W. 2012.**Digitization of library collection in developing countries: the Hezekiah Oluwasanmi library experience.**Library Philosophy and Practice(e-journal). Paper.Vol.823:1-18.

http://digitalcommons.unl.edu/libphilprac/823/?utm_source=dig
italcommons.unl.edu%2Flibphilprac%2F823&utm_medium=P
DF&utm_campaign=PDFCoverPages. Accessed 07 August
2013. USA.

KANYENGO, C. 2009. **Managing digital information resources in
Africa: Preserving the integrity of scholarship.** The
International Information and Library Review. Vol. 41.pp.34-
43. UK.

LAYTON, R. 2011. **Developing a digitisation strategy for your
institution.** The Archival platform.
http://www.archivalplatform.org/blog/entry/developing_a/.
Accessed 25/11/2013.South Africa.

LIU, Y. 2004. **Best practices, standards and techniques for
digitizing library materials: a snapshot of library
digitization practices in the USA.** Online Information Review.
Vol. 28 N°5:338-345. UK.

MOODLEY, S. 2009. **The development and evaluation of an online
tutorial to teach digitization and metadata indexing of
library and archival resources.** MIS Thesis. University of
KwaZulu-Natal.South Africa.

RAFIQ, M.,&AMEEN, K. 2013. **Digitization in University Libraries
of Pakistan.** OCLC Systems and Services.Vol. 29 N°1: 37–46.
http://www.emeraldinsight.com.ezproxy.ukzn.ac.za:2048/journa
ls.htm?articleid=17077482. Accessed 11 June 2013. USA.

TAMMARO, A. 2007.**A curriculum for digital librarians: a
reflection on the European debate.** New Library World.Vol.
108 N°5: 229-246.
http://www.emeraldinsight.com.ezproxy.ukzn.ac.za:2048/journa
ls.htm?articleid=1603246&show=abstract#sthash.mhdCj5Wf.dp
uf. Accessed 21 Sept 2013. UK.

UBOGU, F. 2010. **Project planning, management, quality
assurance and evaluation.** In: Managing digital collections: a
collaborative initiative on the South African framework.
http://digi.nrf.ac.za/publ/. Accessed 11 June 2013.South Africa.

UNIVERSIDAD DEL ZULIA