ORIGINAL ARTICLE

STATUS OF DIGITIZATION PROCESS IN SELECTED INSTITUTIONS OF ETHIOPIA: A BASELINE STAKEHOLDERS' ANALYSIS SURVEY REPORT

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Abstract

The survey paper made an effort to analyze the status of digitization process in selected institutions of Addis Ababa city, Ethiopia, February 2009. The focal objective of the survey was to identify the scope, current practices, development endeavors and future considerations of digitization of records or archival materials in Ethiopian organizations. Data was collected from selected 27 (90%) institutions and analyzed. The study applied survey method using instruments like questionnaire and literature study. In the process of identifying the status, progress, prospects and challenges to digitization and form the basis of providing future roadmap to successful execution of digitization projects, the result of the survey uncovered that there are gaps contributing to compromised digitization activities, questioning its futurity. It has also confirmed findings that uncertain needs, lack of awareness, unproved project executions, resistance to transition from traditional systems, intellectual property issues, the impact of organizational dynamics, the failure of organizations to gear up digitization projects, resources inadequacy, poor long-term planning, the need for management systems, unanticipated costs of technology resources, difficulties in moving into an international arena, lack of clarity in interpreting the digital world and the like are factors affecting the digitization issues in the country. Let alone digitization of records, records/archives of originals lack clearly defined preservation management system. More than half 16 (59%) of surveyed institutions reported that there is no mechanism yet implemented for original record preservation management. Nonetheless, an in-house digitization initiative of records/archive services was the most likely, positively considered future option by the largest number of institutions 24 (88.8%) and from which 14 (51.8%) believed that original record/archives preservation is one of the major criteria and driving force for digitization. Original record/archives digitization should be supported by a defined standard that ensures access, retrieval, interoperability and preservation. In this regard only 10 (37%) institutions of the survey expresses that they did take digitization standard into account and the rest have got no idea about the need for the standard itself. All in-house implementations were conducted exclusive of guidelines; accordingly 20 (74%) respondents confirmed that their digitization activities are on the way in the absence of implementation guideline. Moreover, Ethiopian records/archives digitization efforts are moving forward with out national strategy.

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INTRODUCTION

Background of the Problem

Digitization today is becoming a center stage for the collection, storage and accessibility of information in libraries, museums and archival centers. By digitizing the collections, organizations can provide the public with access to materials that otherwise might not be seen; such as historical documents and collections of objects that are not generally on display. The digitization goes to encourage learning, improve access, preserve originals, or support electronic representations that use the computer and other devices for their operations. This paper reports the study on content digitization in government and private organizations in Ethiopia, held in February 2009.

Digitization is representing an object, image, document or a signal (usually an analog signal) by a discrete set of its points or samples. McQuail (2000) identified the process of digitalization having immense significance to the computing ideals as it "allows information of all kinds in all formats to be carried with the same efficiency and also intermingled". Encarta (2009) indicated that in the late 20th century, the techniques used in creating effects entered a new era, that of digitization. In digitization, text, sound, image and voice are stored as electronic files and viewed and edited on a computer. The term according to Terry (2008) is often used for the scanning of analog sources, such as printed photos or taped videos into computers for editing, but it also can refer to audio (where sampling rate is often measured in kilohertz) and textures map transformation. Hazen, Horrell & Merrill-Oldham (1998) defined digitization as the process of converting, creating, and maintaining books, art works, historical documents, photos, journals, etc. in electronic representations so they can be viewed via computer and other devices. It is a means of creating digital surrogates of analog materials such as books, newspapers, microfilm, and videotapes. Digitization can provide a means of preserving the content of the materials by creating an accessible facsimile of the object in order to put less strain on already fragile originals.

The advantages of digital libraries as a means of easily and rapidly accessing books, archives and images of various types are now widely recognized by commercial interests and public bodies alike (Europa press release, 2006). However, traditional libraries are limited by storage space; digital libraries have the potential to store much more information, simply because digital information requires very little physical space to contain it. There is also an advantage of resources availability to individuals without physical boundary, clickable multiple access at any time, easy retrieval mechanisms, long-term preservation and conservation, affordability and added values like quality and legibility through removal of visible flaws such as stains and discoloration (Gertz, 2000).

The persistent risk of disappearing "last copies" (Silipigni Connaway, L, et. al, 2006) and the declines seen in the condition of national treasures, as exemplified by the 2005 Heritage Health Index Report on the State of America's Collections (Heritage Preservation, 2005) provided the rationale for establishing priorities and balancing access with preservation needs. The transient nature of electronic information can contribute to a

phenomenon called "memory loss." This is a result of data extinctions as technologies become obsolete. There is also a drift away from original bibliographic contexts as time passes (Teper, 2001).

Therefore, these are reasons why several large-scale digitization projects progressing in the country aiming at conserving and preserving old, fragile and deteriorating documents of high scholarly value not only for preserving them but also for providing increased access and search possibilities that become possible once the documents are available in computer-processible form. Digital libraries enable greater access to digital contents, that can be managed from remote locations and provide a way to enrich the teaching and learning environment.

In Ethiopia, government and private organizations house a large and valuable collection of information materials in the form of books, artifacts, records and archival materials. These materials are housed in libraries, museums and in archives depending on the facilities made available or the nature of the organization.

Most of the collections in most organizations are archival collections. They are made up of records (primary source documents) which have accumulated over the course of an individual organization's life time. These records which have been specially selected for permanent or long term preservation due to their enduring research value are normally unpublished and almost always unique; unlike books or magazines, in which many identical copies exist.

There are a number of problems that Ethiopian institutions are facing in the processes of digitization which subsequently contributed deteriorating archival collections. Moreover, issue related to limited access, preservation problems, and inefficiency in business processes are surpassing beyond level of tolerance, because almost all records/archives are under restricted or no access status due to their physical condition; poorly organized, indexed and usually difficult to locate; fragile cultural heritage are under threat due to deterioration losing vital contextual information; restricted scholarly interest; absence of disaster management plans; absence of sharing of information between institutions; restricted educational, economic, political, social and cultural development; overwhelming current records which prevents giving attention to retrospective materials; and technology obsolescence are making collections inaccessible and subsequently extinction.

Therefore, the use the use and application of Information and Communication Technology (ICT) in organizations, digitization of collections is becoming a center stage. The more technology advances, the more converged the realm of mass media will become with less need for traditional communication technologies. For example, the Internet has transformed many communication norms, creating more efficiency for not only individuals but also businesses. However, McQuail (2000) suggested that traditional media have also benefited greatly from new media, allowing more effective and efficient resources to be available.

The main objective for this study was to identify the scope, current practices, development endeavors and future considerations of digitization of records or archival materials in Ethiopian organizations. General the study was to assess the status of digitization projects of records processes.

More specifically, objectives of this survey were:

1. To identify organizations in Ethiopian capital implementing digitization of their collections.
2. To examine what driving force is there for any digitization initiatives?
3. To find out whether there were any standards or guidelines used by organizations in their digitization endeavors.
4. To recognize the need of users in the digitization of the records in the organizations

The significance of study is basically assumed that the findings and recommendations would lead to content digitization standards in Ethiopian organizations; especially when the essential factors for digitization have been identified. Fortunately, following this study a group of professionals has developed a national content digitization standard and guideline. It was also believed that organizations, professional librarians, archivists and curators together may draft appropriate national strategies to support and strengthen digitization initiatives in Ethiopian Institutions. Therefore, this study is significant because it gives overall insight and directions as to how organizations should approach their digitization initiatives, being an invaluable feedback to activities and projects carried out previously.

Moreover, the study may serve to address inter institutional, collaborative and international nature of digitization practice which in turn give readers a thorough sense of the need for digitization and preservation in organizations as to how they can utilize it in contributing to the core mission of creating, disseminating, and preserving knowledge.

METHODOLOGY

Research Method: The overall method or research framework is to characterize and gain full insight in the behavior of organizations with respect to content digitization, a survey method is used. The main reason for this method is for extrapolating the results to the nation. In addition to the survey, for acquiring knowledge about other countries practice that are available for bringing the content digitization to its creators and users, an indepth literature study was primarily conducted.

Population and Site: The population of this study consisted of thirty (30) purposefully selected public and private organizations in Addis Ababa city. These groups of organizations were selected based on pre-prepared criteria articulated by the researchers. For any organization to be included in the selection, it was critically assessed that institutions were required to have an account on information provision activities (public or academic or special), must be reputable with valuable preserved holdings for more than ten years, those who have cultural heritage in their collections, and private institutions directly connected or engaged in digitization or automation or related activities. Anchoring in the above premises the target population was set for the study. Area of the study is

also limited to issues within the process of conversion of non-digital records/archives into corresponding digital format as well as assessing the subsequent management of both original records/archives and their digital counterparts. List of organizations visited are mentioned at the acknowledgement section.

Sample, Sampling Technique and Data Collection: Out of the total number of research target institutions, 27 (90%) were participating in the survey in February 2009. Based on non-probability, judgment sampling technique, purposefully selected 20 public institutions, 4 private institutions directly connected or engaged in digitization or automation or related activities, 1 religious organization, 2 national and international non-governmental organizations filled the questionnaire. In line with the objectives and nature of the survey, questionnaire was distributed to the institutions before planned meetings. Following, the questionnaires were filled, collected and recorded by the researchers themselves in an open face-to-face discussion in the form of interview. During data collection, the discussion was held between the researchers and individual institution's senior executive or administrator of the organization, ICT personnel, archivist, public relation officer, curator and librarian. No discussion has been held without the presence of ICT personnel, archivist, public relation officer and librarian. This has helped researchers to forward question of specific nature to the specific individual.

Instruments: In this study instruments like: questionnaire and literature study were in use. All questions in the questionnaire were open ended to generate more detailed answers and gather information in order to provide greater freedom of expression, avoid bias due to limited response ranges in the case of closed ended questions and grant respondents to be able to qualify and re-qualify their answers. Both instruments have enabled researchers to explore the maximum possible data/information in analyzing current digitization situation, driving force towards digitization situation, use of standard and guideline and identify the need for records' digitization.

Data Analysis: Responses to structured open ended questionnaires were easily analyzed manually as the process is much more mechanical with the analysis being left until the data has been collected and interpreted. The intention of getting presumably unbiased, unconstrained, and thoughtful responses that encourage researchers to use open-ended questions was not an easy job for the researchers. But fortunately, the analysis showed a possible technique for dealing with open-ended question, that the answer fields identified the issue being addressed by a particular response. The responses corresponding to each and every question were categorized by grouping closely related words together and classified them for easy analysis based on content. Then the categories have got more meaning, and more descriptive sense, than those that was originally generated. It also opened up opportunities to drill down on one or several of the issues to reveal more specific opinion of the respondents. The categories were generated from the results of the key word frequency and interpretation of the sentences constructed. The word count strategy operated on the premise that open-ended responses are strands of phrases and sentences constructed of major and minor keywords as capturing the essence of any response was the ability of the researchers to extract and manipulate meanings keeping the

major and minor words intact in some cases. Following, frequency analysis was performed on the extracted retained words. After performing word frequency or number analysis on the original variables, the result was indicated and converged to just a few specific issues/categories. In case of dichotomous responses researchers produced modifications. Using this method the researcher systematically worked through each transcript to specific characteristics within the text. This procedure was performed for each of the response variables, and then the researchers were able to produce a list of categories, letting the categories emerge from the data.

Ethical Considerations: Before data collection from selected institutions, the researchers have distributed an official letter with detail description of the research objectives from the funding organization, Ethiopian Information Communication Technology Agency, based on which consents were collected. Moreover, to have

the respondents involved in the study, a letter of permission was issued by all involved in the study. On the other hand, confidentiality of information provided by respondents was communicated.

RESULTS

The organizations, participated in the survey exhibited a diverse array of purpose, objectives, programs, and governance types. They represent similar stages of organizational maturity concerning digitization, but some are new to the initiative, and others have been in operation for quite some time. Most of the participating organizations were introduced to the digital arena not earlier than 5 years, when advances in digital records accessibility have been there for more than a couple of decades with possible and feasible projects to be undertaken. Thus, this section presents the result of the analysis carried out to answer the basic questions forwarded in the survey.

Records/Archives Operational Situations

Table 1. Situational analysis of record formats, organization, retrieval and preservation mechanisms

	Traditional		Modern or Standard		No mechanism		No answer		Total	
	No.	%	No.	%	No.	%	No.	%	No.	
Format Type	17	62.97	10	37.03	-	-	-	-	27	100
Record Organization	22	81.48	5	18.52	-	-	-	-	27	100
Retrieval Mechanisms	10	37.03	5	18.52	-	-	12	44.45	27	100
Preservation	4	14.81	5	18.52	16	59.26	2	7.41	27	100

Table 1 explained overall situational analysis of records/archives formats possession, organization, retrieval and preservation mechanisms. As it is clearly described in the table, 17 (62.9%) institutions participated in the study posses traditional or non-digital records/archives and only 10 (37%) of the institutions obtain both digital and non-digital records/archives. A high proportion of institutions 22 (81.4%) had their records and archives organized under a simple category system, title, date, function, chronology, ID number, computer folder and file packets which is very traditional and 5 (18.5%) of the institutions implemented modern and standardized file organization and management system.

Concerning retrieval mechanism 12 (44.4%) institutions could not report their organizations' records/archives identification mechanism having a records/archives management structure within due to lack of professional human resource.

Traditional retrieval mechanism describes 10 (37%), while the remaining 5 (18.5%) of the institutions reported use of appropriate means of record/archives identification mechanisms.

Record preservation and management of the original source materials is also far behind modernity. More than half 16 (59.5%) of surveyed institutions reported that there is no mechanism yet implemented for original record preservation management. Modern and standardized preservation mechanisms were used among 5 (18.5%) institutions and the rest 4 (14.8%) followed traditional means like provision of instructions on how to handle resources, keeping master copy and three copies of every standard document, storing two copies of every bound newspapers, and preserving negatives of the photographs in special cases.

Table 2. Records/archives digitization initiative among institutions

Answer	Frequency	%
Yes	24	88.88
No	2	7.41
No answer	1	3.71
Total	27	100

Table 2 explained the question of whether a particular institution initiated digitization for business efficiency and effectiveness. And accordingly an in-house digitization initiatives underway was the most likely, positively considered future option by the largest number of institutions 24 (88.8%), only 1 (3.7%) could not respond to the question, but 2 (7%) institutions felt option of digitization has never been thought of at all.
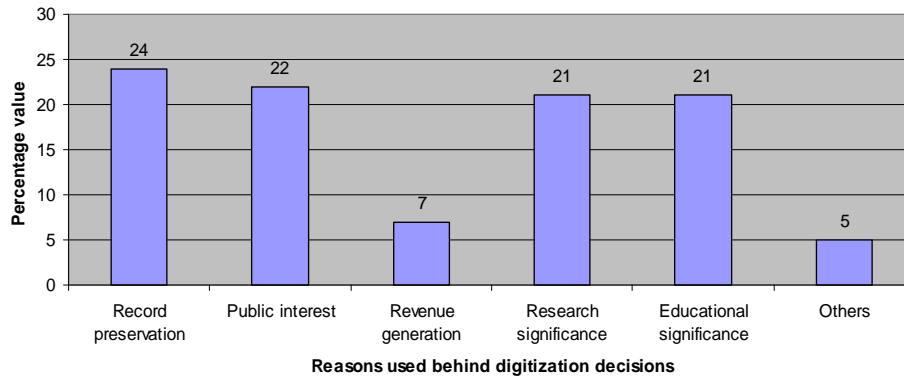

Figure 1. Reasons used behind for digitization decision

Figure 1 portrayed an encouraging scenario that more than half 14 (24%) of surveyed institutions reported original record/archives preservation is one of the major reasons that has made the organizations to consider digitization. Public interest has also been taken as other important criteria for digitization decisions that constitute 13 (22%) institutions. Research and educational significance hold 12 (21%) institutions respectively which again signified the need for digitization, whilst just 4 (7%) institutions reported revenue generation has a significant push and 3 (5%) institutions have also described efficiency, customer satisfaction and business organizations' need necessitated digitization decisions.

Based on the reasons, institutions have prioritized the type of materials to be digitized according to their own context that the majority 20 (63%) of the institutions said organizational printed records were converted to a digital format, 6 (19%) of them digitized their audiovisual materials, 1 (3%) said newspapers and magazines were the types of records/archives targeted for digitization.

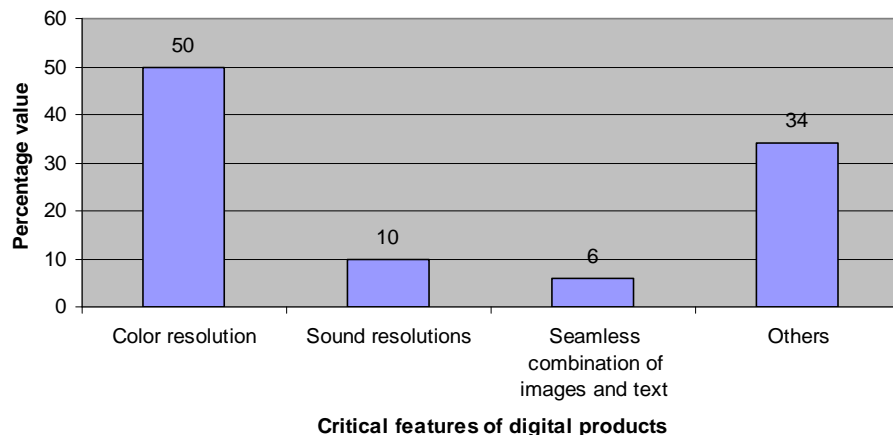Researches and books were converted among 2 (6%) institutions respectively.

Figure 2. Critical features of the source material mandatory to be captured digitally

Figure 2 explicated that 15 (50%) of the institutions believed resolution of color is more important, 3 (10%) were capitalizing on sound resolution for their audiovisual materials, seamless combination of images and texts were mentioned to be the very critical features of the sources materials that needs to be captured in a digital product among 2 (6%) institutions. Based on critical features of digital products, 15 (36%) of the institutions communicated PDF as a prevalent digital file formats accepted as an international standard, 12 (29%) of them preferred word format, 10 (24%) institutions used JPEG, and 2 (2%) of them have also chosen GIF.

Table 3. Long-term goal of digitization among institutions

Long-term goal	Frequency	%
Preservation	8	29.63
Efficiency	5	18.52
No answer	14	51.85
Total	27	100

Table 3 clarified 8 (29.6%) of the institutions said preservation was and will be the primary goal of digitization endeavors, whilst 5 (18.5%) said efficiency that improve access was the goal. Unfortunately, more than half 14 (51.8%) of the institutions could not respond to the question due to lack of planning.

Table 4. Digital records/archives integrity within and outside

Records/archives integrity	Frequency	%
Never been thought	5	18.52
Need consultation with others	4	14.81
Not yet demanded	3	11.11
No answer	15	55.56
Total	27	100

Table 4 revealed that 15 (55.5%) of the institutions could not answer the question because the whole digitization activity lack appropriate pre-planning, sound project design and looking forward in to the future, 5 (18.5%) of them said data integrity was never been thought, 4 (14.8) institutions said the issue was requiring consultation with other institutions and 3 (11%) of them understood the need but simply believe that it is not yet been demanded and noted that mechanisms will be devised in the future.

Table 5. Intellectual property (IP)/Copyright considerations and management analysis

IP/Copyright considerations	Frequency	%
IP/Copyright considered	3	11.11
IP/Copyright belongs to the institutions	3	11.11
No IP/copyright considered	18	66.67
No answer	3	11.11
Total	27	100

Table 5 illustrated how intellectual property/copyright management was considered during digitization. The majority, 18 (66.6%) of institutions reflected triviality on intellectual property/copyright issue consideration, 3 (11%) of them expressed how they were considering the issue, and the remaining 3 (11%) of the institutions believed that intellectual property and copyright should belong to the institutions themselves for those records/archives in their holdings.
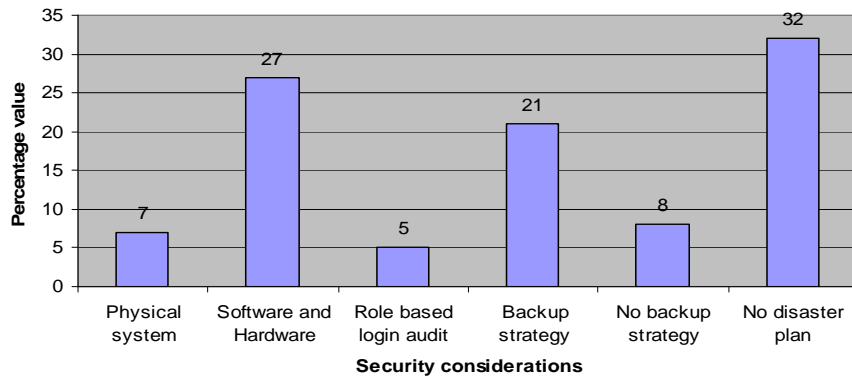
Figure 3. Security, backup and disaster considerations during or after digitization

Figure 3 showed that 20 (27%) of the institutions considered software and hardware use to address security and backup plan, 16 (21%) of them have defined backup strategy, 24 (32%) institutions have testified that they have no any disaster plan, and 6 (8%) survey participants described the absence of back up strategy as well.
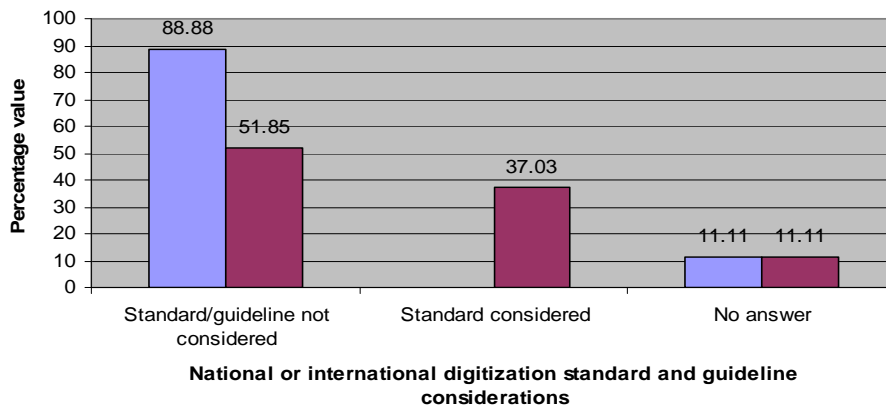

Figure 4. National or international digitization standard and guideline considerations

Figure 4 disclosed that 14 (51.8%) of the survey participants did not take digitization standard into account because of failing to use numerous scholarly schemes and standard and 10 (37%) institutions considered standard inconsistently.

Concerning metadata standard elements the analysis uncovered that 20 (74%) of the institutions followed institutionally define metadata, only 4 (14.8%) of them used international metadata standard and the remaining 3 (11%) provided no answer.
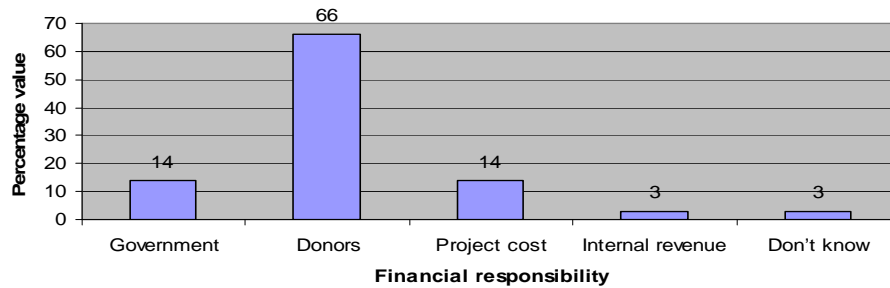

Figure 5. Financial responsibility

Figure 5 described that 24 (66%) institutions believed that donors could be approached, 5 (14%) institutions assumed digitization short-term and the long-term

costs should be covered by the project and again 5 (14%) of the institutions believed that it is government's obligation to cover the required resource.

DISCUSSION

This section summarizes findings for several characteristics that define organizations' records/archives: their possession, organization, retrieval, planning, management, reasons of digitization initiatives, types of digitized records, digital image capturing, records integrity, format used, intellectual property right considerations, security, backup plans, disaster plans, standard, implementation guidelines, cost associated with digitization and practices.

Survey participating organizations define and possess distinct types of information records both digital and non digital materials brought together in a product form to the users, appears unspoiled and unified but truly speaking it is very much disorganized and carelessly handled. The result of the study confirm that institutions are far behind the era of digitization as it was only 10 (37%) institutions hold digital products.

According to Bennington (2008) 'Digital records' are defined as "Records created, communicated and maintained by means of electronic or computer equipment." This includes records that are born-digital and those that have been digitized from another medium or format (e.g. paper records that have been scanned). Digitization is a tool of preservation mainly by reducing users or researchers use of fragile original documents to enhance access to archival materials and, by extension, to build a presence for archives in the virtual world.

The transformation of the work environment through the adoption of digital technologies has brought both benefits and challenges for overall global records/archives management. Ethiopian institutions that hold digital products in

their holding are now making efforts to create a proportion of their records in digital form and most are developing systems and practices to enable the ongoing maintenance and accessibility of digital records. Archives/records offices recognize that there are challenges faced by public offices and local authorities in managing both traditional and electronic records. In some institutions records/archives are decentralized among existing units without record management guideline and human resource where retrieval becomes a problem.

An organized effort to promote policies or practices beneficial to digitization within the participating organization seems to have no concern. National Archive and Library Agency (NALA), National.

Museum, Orthodox Church, and Birhanena Selam Printing Press, as relatively strong organizations were some that pursued promoting the issue at particular points in time. But practically speaking the rest stayed behind, when information was supposed to be at the forefront. Records men and archivists were supposed to be at the forefront when it comes to management, development and retention of public records, but they are deficient in direction and the required training. As a result, many records and archives are not organized, filed and conserved. Open communication, in the form of written guidance and training, would have helped institutions adjust to the changes and accept responsibility for their role.

Physical preservation of records and archives are also based on a weak and non standardized system that provides a very

low level of reliability and security, which is beyond preservation of multiple copies. In some cases these have been stored on microfilms and original magnetic tapes for years, but a preservation strategy has not yet recommended or implemented. The tapes may deteriorate and may become completely unreadable after some time. At best they may be readable at a slow speed, and even then portions of the data may be lost beyond recovery.

The National Archives and Library Agency has commented that it is its obligation to preserve more diverse non-digital and digital data that are produced by government departments and agencies.

Records are received from public institutions based on public inquiries, without the usual intermediate period of storage at a government agency is the only mode of transformation of data to where it can be organized. The traditional preservation of printed text on paper need to be progressively replaced by preservation of the digital source files. A digital record/archive needs to be set up for this purpose, based on the same principles of storage technology. These records/archives are in a wide range of formats, including those currently produced products, but also including sound and video recordings and even virtual reality models. For the present, records are being stored in their original formats, and are made available only to on-site visitors to the National Archives and Library, Addis Ababa. Therefore, NALA has embarked on records/archives digitization but some of the records archived now digitally are relatively new, in some cases still being available in whole or in part on the website of the originating agency or institution. Early selection and early archiving has the

great benefit of insuring against the loss of data, and of documentation, before they went out of use. This is one of the very real dangers illustrated by the finding.

Concerning preservation institutions must obtain mechanism which minimizes or avoids the growing vulnerability of these precious resources to extinction before their conversion.

Institutions' top management, record workers and archivists need to understand the risks associated with records/archives of any sort in the process of communication. Institutions of public and private should believe that records/archives remain authentic evidence of public activities. However, not each institution bears the same risk nor is the risk understood and weighed. Proper management of records/archives requires a partnership of all who have direct or indirect relationship. Records management system can facilitate communication between partner groups to help understand and coordinate responsibilities among each other. Archives/records management theory states that an authentic record possesses content, context and structure. Even today most of content and metadata structures are challenging for record workers and archivists. Therefore, standard stands on the first gate to the processes.

During digitization process high resolution copies, accurate version of colors and a seamless combination of images and texts were mentioned to be the very critical features of the sources materials that needs to be captured in a digital product. The master record/archive should explicitly capture all from the original materials. Digitization should ensure quality equipment for quality digital content; simplify implementation by specifying the minimal requirements for the technical specifications for digitizing original, source

records; promote greatest interoperability for the sharing of digitized content with the greatest of ease for implementation; adhere country context; and ensures appropriate description of digitized content for proper storage, search ability, retrieval, sharing (dissemination), and classification based on standard and guideline.

Institutions that have positively considered digitization for future better record/archival management have not articulated a sound plan for execution but to the contrary they simply started implementation. Situations like this pose great challenge when it comes to consistency of the information contained both in the original and the digital records. In this dynamic world where technologies evolve so rapidly that several digital products, services and techniques originate at the same time, it is always a dilemma to choose amongst several alternatives. Ultimately, different institutions end up using various products or services which are or not compatible. This is where the importance of standards comes into the picture.

Transmission or reproduction of materials protected by copyright allows fair use but it may require written permission of the copyright owners. Works not in the public domain cannot be commercially exploited without permission of the copyright owner, but responsibility for any use rests exclusively with the user.

Surveyed institutions of 14 (51.8%) did not took digitization standard into account because they failed to use networking opportunities that might have encouraged scholarly discussions through conferences, online forums, workshops and other means that would have given them space for issues, problems, or topics debated in the

area of digitization either. Nearly every organization attempted its own way of doing business disregarding interoperability, data integrity and information transaction between organizations and agencies.

Most institutions and IT companies incline towards defining their own metadata due to lack of national standards. The meta-data defined usually tries to address the immediate needs of each individual institution. Records, especially digital records, cannot exist as authentic and reliable evidence of business without records/archives management standard metadata. Records/archives management metadata is data that enables the creation, management and use of records through time. It was also found that many organizations were using self defined metadata elements to bundle their digital records/archives, and that there was variety in the type and amount of metadata used, depending on the types of records/archives. For any detailed technical metadata, the survey participants could not look forward or at least take careful note of this level of metadata needs. The survey has also managed to uncover that the absence of digital records/archives standards contributed to being not clear about the overall nature and characteristics of digitization, therefore, most have failed to articulate the whole project planning and execution.

Surveyed institutions of 24 (88.8%) followed no implementation guideline, though during the survey, the institutions have shown that they have some digitization projects undergoing in their organizations. Some of the projects were also discontinued in some organizations as a result of poor planning. However, the

institutions have faced several limitations throughout the process of digitization; mainly: uncertain needs, lack of awareness, unproved project executions, resistance to transition from traditional systems, intellectual property issues, the impact of organizational dynamics, the failure of organizations to gear up digitization projects, resources inadequacy, poor long-term planning, the need for management systems, unanticipated costs of technology resources, difficulties in moving into an international arena, lack of clarity in interpreting the digital world and the like are factors affecting the digitization issues in the country lack of human resource, lack of training, and lack of implementation guidelines.

CONCLUSION AND RECOMMENDATION

CONCLUSION

The findings outlined throughout this report identify concerns about the current status and tenuous or unsubstantiated state of many organizational digitization initiatives. These findings, in concert with the recommendations proposed, offer a blueprint for those exploring appropriate strategies to support and strengthen digitization initiatives. The number and diversity of issues that affect digitization and jeopardize the future can be warranted by a coordinated and consensus-driven approach to the problem, that is, through a

National Standard built on past concepts and experiences in implementation, guidelines and emerging standards for metadata in support of record and archive management activities. Record and archive managers, therefore, no longer should start from a scratch. Thus, Ethiopia is far behind many increasing numbers of institutions or

consumers across the globe that have succeeded to produce digital products and opened access to all. In order to sketch a bigger representation of digitization situation in the country, detailed and advanced study need to be conducted sometime in the future.

RECOMMENDATIONS

The survey has identified several key stakeholders which generate, maintain and preserve huge amount of data in various formats and store it on various media – digital or non-digital. There are independent initiatives in institutions to digitize their collection. The organizations participated in this survey themselves offered numerous suggestions for strengthening and making digitization go forward and be more sustainable. The following recommendations are based on the preliminary findings of the survey and a synthesis of their ideas and of common themes and issues that arose in the survey.

1. Any digitization activities and attempts by institution have to start right and first from national standard, but it should be supplemented with national strategy.
2. Digitization initiating institutions should primarily conduct needs assessments, market analyses, or some other appropriate research prior to formally involving in digitization activities, in order to identify audiences, clarify opportunities, and determine the nature and form of digitization.
3. Professional associations in the area, Ethiopian Information Communication Technology Agency (EICTDA), NALA, national and international non-governmental organizations and universities may collaborate to build the required new professionals

and build necessary   skills among the existing working   professionals.

4. Institutions should develop a business plan for each new initiative or project to ensure digitization idea is viable; revisit the plan at various intervals

5. throughout the life of the digitization project.

6. Concerned professional association in collaboration with individuals, NALA and government need to develop and implement knowledge management and intellectual property policies, so the assets of the initiatives are clearly identified and managed.

7. Institutions may also recruit corporate members to encourage new perspectives and foster future sympathy.

8. Digitization projects initiated by institutions should address security and disaster prevention mechanisms and policies.

9. Institutions should market the products and services aggressively to the community.

10. For future better data integrity and digitization activities organizations should establish digitization alliances so that information can be shared, digitization issues discussed, expertise group developed, best practices explored, joint licensing of digitization software or hardware investigated and implemented, joint funding agreed, and interests represented.

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