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The State of Manuscript Digitisation Projects in Egypt

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Walid Ghali

13 The State of Manuscript Digitization Projects in Some Egyptian Libraries and Their Challenges

Introduction

This chapter aims to shed light on the state of digitization projects that have been undertaken or are in the planning stages in manuscript libraries in Egypt: specifically, the Egyptian National Library (Dar al-Kutub), where many different manuscripts projects have already taken place; the Central Library of Islamic Manuscripts known as the "Awqaf Library"; the Bibliotheca Alexandria; and the Library of al-Azhar. Known as the al-Azhar online project. The challenges faced by the respective project teams will be discussed with a particular focus on the administrative and technical aspects. In addition, this chapter discusses to what extent the infrastructure and funding is available to implement digitization projects.

Since manuscripts are considered part of the cultural heritage of a country, they have been subject to both deliberate and unintentional destruction. Historically, large collections of manuscripts were destroyed during wars that took place in the Muslim world during the medieval period. However, the destruction that has happened in modern times because of wars and conflicts has been significant; consider the burning of manuscripts in Zanzibar in the sixties, then in Sarajevo during the nineties, and the destruction of cultural heritage in Iraq, Syria, Libya, and other countries during the "Arab Spring" upheavals; all are clear evidence of just how endangered manuscripts can be. For instance, there were two incidents that took place in Egypt during and after the January 2011 uprisings. The first incident was the setting fire to the Scientific Council's building where many rare books burned, including a rare copy of *Description de l'Égypte*. The second incident occurred in 2014 near the Egyptian National Library in Bab al-Khalq, when a large amount of explosives were detonated near the Library. At the time of this writing, work was still underway to reconstruct the damaged parts of the building, as well as some minor damage to some of the collection.

Besides the destruction of manuscripts that happens during wars and conflicts, there is another danger, which is the deteriorating condition of manuscripts because of poor storage and conservation. In Egypt, there are a few places that provide environmentally controlled storage for manuscripts. Generally, they

are not equipped with the most recent technology that is recommended by many international preservation agencies. A related issue to the storage problem is the way in which the manuscripts are handled for cataloging, reproduction, or for research purposes. Manuscript libraries in Egypt lack manuscript handling tools, such as spin support cushions, ribbons, or cotton gloves. Moreover, neither the staff who deal with manuscripts in these libraries nor the users received training or instruction on how to should deal with the physical manuscripts on a daily basis.

Digitization has many positive impacts on manuscripts as part of the cultural heritage of Muslim countries, and as valuable primary resources that are used by scholars all over the world. This heritage was and still is vulnerable to many human and natural dangers. Thus, digitization is considered the most significant method to preserve this heritage and to make it available for wider audiences with a minimum of cost and time.

All the above mentioned reasons, as well as the prevalence of natural catastrophes are reasons that digitization is not an optional or complementary need, but the optimum solution for manuscript preservation. Nevertheless, digitization projects have many challenges in developing countries in general, and in Egypt in particular.

Background

Egypt is considered one of the countries with substantial wealth of manuscript and archival materials. The total number of Islamic manuscripts is approximately 132,000 (Information and Decision Support Center [IDSC], 2015), which puts Egypt in second place after Turkey with regard to manuscript holdings. One of the biggest challenges in Egypt is that the manuscript collection is scattered throughout many different libraries and institutions without the slightest amount of cooperation between them. In addition, there are at least two major governmental institutions staking claims to ownership of Egyptian manuscripts; the Ministry of Culture, and the Ministry of Antiquities. Lately, the Ministry of Endowments (Awqaf) has also joined this dispute after the establishment of the Central Library of Islamic Manuscripts to host all Awqaf manuscripts.

The Egyptian National Library (established 1870) includes the largest collection of manuscripts in Egypt (approximately 60,000 volumes), including a large number of autographs, illuminated manuscripts, and a significant number of Qur'an manuscripts. This massive collection was generated primarily from numerous private collections that were donated by distinguished scholars or

public figures.¹ In addition to the manuscript collection, the library has a significant collection of papyrus, and historical archival documents from the Mamluk and Ottoman periods.

The remaining manuscript collections in Egypt (totalling approximately 70,000) are distributed throughout many different institutions, such as the Library of al-Azhar (40,000), the library of the Ministry of Endowments (8,000), and various Egyptian universities. Another valuable collection of microfilmed manuscripts exists in the Institute of Arabic Manuscripts.²

The 1990s was the period when many Egyptian researchers started to envisage manuscripts' digitization and automated cataloging. A number of seminars and conferences were established, all of which focused on the use of technology with the large number of manuscripts in Egypt. As a result, many articles were published, and various projects emerged. Moreover, many researchers paid great attention to the study of manuscript library catalogs, which according to them had many drawbacks. The studies pointed to the advantages of the use of databases and digitization to overcome these problems and to enhance access to the manuscripts.

Overall, the literature on manuscript digitization and cataloging can be divided into three main categories. The first includes studies that focus on the necessity of using information technology and its applications at manuscript libraries. The second deals with the different technological applications that could be exploited in the field of manuscripts; such as the databases and networks. The third category elaborates on technological experiments to catalog or digitize manuscripts in general and in the Egyptian context in particular.

Bibliographic/Image Databases

With regard to database applications, one important research paper focuses on the plan to establish an integrated database for the manuscript collection at the National Library of Egypt. This project was initiated in 1992 by the Information

and Decision Support Center (IDSC)³ as part of the development plan of the National Library. The project was meant to be a starting point to build a large scale network for digitized manuscripts in the Arab World. The plan was to include different types of databases, such as bibliographic database for all manuscripts, a full-image database for selected manuscripts (mainly those with illuminations), a biographical database, and finally a database for all critical editions (IDSC, 1992).

After the database had been established, a team of catalogers worked to create metadata records for the manuscripts; while another team worked on digitizing the original manuscripts and uploading them to another server. This project lasted one year (1992–1993), during which the team managed to create about 37,000 records from the original register of the manuscripts as well as the card catalog.

In his book *The National Library Database*, Sayyid (1999) criticized this project in general, and specifically, the way it used manuscript records without double checking for quality assurance. Another criticism was made by Muhammad (1995) who claimed that this database had many shortcomings, such as the inaccuracy of its metadata, the lack of access points, and the low quality of the scanned images because of using very basic scanning devices, which led to the whole project being considered a failure.

A few years after that project, a group of IT experts from IDSC presented at the Annual Conference of the Arab Federation of Libraries and Information (AFLI). Their presentations addressed the stages of automating manuscripts catalogs, building the databases, and attaching the digitized manuscript to the metadata (IDSC, 1999). Nevertheless, and even considering all the above mentioned disadvantages, the IDSC developed from scratch new integrated software, known as the Advanced Manuscript Integrated System (AMIS), to store the metadata alongside the digitized manuscripts. It is worth mentioning that one of the major problems they encountered at that time was the data migration between the original databases and the integrated system; in addition to that, they were not able to retrieve a massive number of digitized manuscripts from the images server.

Another study that pointed to the impact of bibliographic databases on manuscripts was done by al-Nashshar (1994) as part of his doctoral research at the University of Alexandria. He argued that the bibliographic database can be

¹ From 1915–1956, many private collections were donated to the library, or were collected from palaces after 1952 revolution. These collections belonged to scholars like Muhammad Abdull, or Zaki Mubarak who are well known scholars in the Middle East.

² The Institute was established in 1946 as part of the League of Arab States. Since that year it has been making great efforts to microfilm manuscripts from different parts of the Arab world, including acting as a depository for those filmed by the UNESCO mobile microfilm unit. Available at: <http://manuscriptsinstitute.org/Default.aspx>

³ IDSC was established in 1985 to act as the Egyptian Cabinet Think Tank. Its mission is to impartially support the government decisions through advice on best policy scenario in all fields including information technology and developments of Egyptian libraries.

one of the best solutions to establish a cooperative cataloging project across Egyptian manuscripts libraries; he proposed MINISIS as a database management system to build this project, which would be known as the Manuscript Union Catalogue of Egypt.

A major shift took place in the mid-90s, particularly in 1996 when the National Library of Egypt held an International Symposium on Manuscript Preservation, which was organized in collaboration with the Islamic Educational, Scientific and Cultural Organization (ISESCO). A session was devoted to the discussion of the use of the latest technologies in the field of manuscripts, and the achievements of the various projects around the Muslim world. Managers of some of those projects demonstrated how technology enhanced the services and performance in their libraries and manuscript centers (Naqshabandi, 1996).

Another key development happened in 1996 particularly when, at the celebration of its golden jubilee, the Institute of Arabic Manuscripts invited many libraries and manuscript centers to discuss the manuscript cataloging challenges in the Arab world. There were many recommendations intended to encourage other manuscript libraries and centers to use digitization and database technologies. However, as will be discussed later, the Institute did not succeed in implementing those very same recommendations with its own collection of microforms (Ma'had al-Makhtutat, 1996).

In 1998, the Institute held another conference about challenges in the manuscript field. At this conference the Institute proposed the building of a website that would assist other institutions in following the project mandates; yet, none of these recommendations were achieved until almost ten years after the conference.

Nevertheless, the Institute began to build a bibliographic database for its valuable collection of microfilmed manuscripts in 1998. This project had been tasked to the Regional Centre for Software Engineering and Information Technology (RTSIC). A relational database was designed with full cataloging template and a local authority file with the common name authorities from the bibliographical resources. This project was not completed because of budget reasons as well as some technical problems, such as the basic and archaic design of the database and the lack of a proactive search engine. Moreover, it was difficult to attach images to the manuscript metadata records. In 2012, the Institute revived this project and was able to migrate the old data into KOHA, the well-known open source library management software.

Also in 1998, a paper was presented by A. F. Sayyid on the application of technology in the field of manuscripts. The author focused on the contents of a bibliographic database for manuscripts, listing all required information that should exist in any database or website. He declared that bibliographic information is

not enough to create manuscript surrogates, but there is a need to record all codicological information that can be used to determine the uniqueness of the manuscript, distinguishing it from other copies (Sayyid, 1998).

Manuscript Portals

There were many studies and seminars on the implementation of online manuscript portals between 1998 and 2000. An important one was the Annual Meeting of the Joint Authority for Heritage, where a group of manuscript experts meet to discuss the technological applications in cataloging and the digitization of manuscript collections in the Arab world. Four meetings were held during this period, and as a result of those meetings, the Institute of Arabic Manuscripts published a collective work that included various papers focused on networking, databases, and the digitization of manuscripts (Halfan, 2002).

In this collective work, there was a study by Tashkandi (1998) in which he discussed the feasibility of establishing a network between all manuscripts libraries and centers in the Arab world. He concluded that there are many justifications to adopt this network, such as the magnitude and quality of manuscript heritage, manuscripts being vulnerable to loss and smuggling, and the weakness of the traditional bibliographical tools. In his proposal, Tashkandi hinted at the practicality of digitizing manuscripts adding that this would help the libraries to make marginal profits from the services they provide to manuscript researchers. This would thereby allow libraries to maintain and enhance their services without relying on governmental funding on the one hand, and help in promoting the heritage on the other hand.

Two more studies by Nabahan addressed the importance of technological tendencies in the field of manuscripts. The first study was entitled "Towards a comprehensive plan to establish a manuscript network" (Nabahan, 2001). In this study, in an echo of the plans for microfilming proposed by UNESCO and the Arab League in the 1950s, he presented a comprehensive plan to make manuscripts in the Arab World accessible, pointing to the necessity of digitization to facilitate manuscript access, especially for people who do not have the resources to travel across the world. In his second study he put forward his vision of a future technology and the magnitude of new horizons that could be employed and invested to serve documentary heritage (Nabahan, 2002).

As a result of these meetings, it was recommended that "a website be created for the manuscript collections, and it should be managed in a way to facilitate cooperative cataloging" (Ma'had al-Makhtutat, 2000, p. 13). The plan was to establish a cooperative cataloging initiative between all manuscripts centres and

libraries; however, this was not an easy goal because most of the libraries had neither the requisite infrastructure nor the trained personnel.

In 2000, the Egyptian government established the Center for Documentation of Cultural and Natural Heritage (CULTINAT), which is now part of the Bibliotheca Alexandrina and supported by the Ministry of Communications and Information Technology. CULTINAT is involved in a large number of documentation and heritage preservation projects. For example, the Center has produced four books and compact discs under the title *The contributions of the Arab and Islamic civilizations to astronomy, chemistry and medical sciences in Arabic, English and French* (Center for Documentation of Cultural and Natural Heritage, 2006). In order to prepare for these projects, the center established an annual seminar and round tables of experts in the field of heritage preservation. It invited experts from all over the world who were working on manuscript digitization projects to share their knowledge on digitization, cataloging, and editing.⁴

Another study that addressed a number of local and international projects in the field of digitization was done by Salih (2004). He investigated some international and local digitization projects as well as digital library initiatives. The Library of Congress and New Zealand Digital Library Project were studied as international bodies; and some other projects associated with manuscripts were elaborated upon such as the Egyptian National Library experience with the UNESCO Memory of the World project in 1997.

One of the important studies, and basically the only one in its type, is a detailed literature review that was published in 2004. In this review, the literature in the field of information technology applications and manuscripts was surveyed and analysed. The review highlighted the significant gap in research and publication in the Arab world on the technological impacts on manuscript digitization and accessibility (Parahat, 2004).

A detailed study investigated the efficiency of four manuscript databases by making a comparison between the international projects and local projects in Egypt (Ghali, 2005). The four databases studied were those of The National Library of Egypt, the Institute of Arabic Manuscripts, The Bibliotheca Alexandrina, and the American University in Cairo. One major conclusion was that there was a lack of cataloging, scanning, and programming standards that consequently affected the completion of those projects. The study had a practical component wherein the researcher built a MARC database using WINISIS for a group of manuscripts that included a scan of the manuscript that corresponded

to each entry. It worth mentioning that many manuscript libraries have adopted this method in their cataloging projects.

In 2006, IDSC established the Arabic Manuscripts Website. The main aim of the website is to publish information about manuscripts in Egypt, the state of cataloging, and any digitization project. It includes about 61,000 metadata records describing diverse manuscripts collections with thousands of scanned images attached to some of these records. It also includes a search engine which could be used for basic as well as advanced search (IDSC, 2006).

Another study, carried out by the author, focused on the usage of metadata schemas to build a digitized collection of manuscripts in Egypt (Ghali, 2012). The study dealt with national and international digitization projects, and investigated the extent of using standards in general and metadata standards in particular. Furthermore, the study elaborated the lack of standardization in the digitization projects in Egyptian libraries. Although many metadata schemas had been analyzed, the study provided a prototype design of a metadata schema to be used with the digital manuscripts; the researcher used Stylus Software to create that schema.

In conclusion, there have been a few studies focusing on manuscript digitization in Egypt and the preceding paragraphs were intended to give a glimpse of those studies. It also shows the lack of research being done on this subject, which is in fact one of the major problems in the field of digitization in Egypt. As a result, many projects have begun and ended without documentation, evaluation reports, or even research papers to explain their methods and results.

Methods

This study is based on observational methods in which each digitization project has been studied and examined closely. In addition, a brief questionnaire was distributed to a particular group of experts who took active roles in the respective projects in order to learn about any challenges and problems they had encountered.

Manuscript Digitization in Egypt

Observing digitization projects in Egypt, one can argue that these projects can be divided into two categories: a) digitization projects that cover all manuscript collections in a particular library or b) selective projects in which other institutions or organizations fund a digitization project to digitize a select group of manuscripts, such as manuscripts on a specific subject or language. Because of the limited number of manuscript projects in Egypt, there is often overlap

⁴ More information about CULTINAT can be found at <http://cultinat.org/General/Cultinat.aspx>

between these two categories. In other words, some libraries work on their own project while also getting funding from other organisations to digitize a select group of their own manuscript holdings.

With regard to the full digitization projects, one was launched at the Al Azhar Mosque in Cairo, which is one of the oldest and most prominent learning centers in the world. Its library, which is located some miles away from the mosque, contains over 42,000 manuscripts of scientific and historical significance. In 2000, the Al Azhar Online Project was begun to preserve these manuscripts with the intention of having a world-class search engine that would allow users to download rare manuscripts. After the project was launched, all of the manuscripts along with their metadata were made available online; later the manuscripts were only available for a monetary fee. Eventually the project was halted and the website disappeared. The initial aim of the project was to scan 42,000 manuscripts and make them available, yet for unknown reasons the project was not completed and the fruits of the project are not available to the public (Al Azhar online library, 2006).

Another significant digitization project was an outcome of the revival of the Alexandria Library, where a section for heritage publishing was established as a part of the Manuscript Centre. This section's mission is to release various publications of the Manuscript Centre in both electronic and printed forms within the framework of a number of ambitious endeavours; one of which was the Digital Archive Project. This initiative aimed to produce digital copies of the BA's rare manuscripts on CDs using high-tech book scanners and state-of-the-art digital cameras as well as graphic specialists to process captured images. In the meantime, MARC records for all of those manuscripts were uploaded to the library online catalog (www.bibalex.org).

The main manuscript scanning project was called the Digital Manuscript Library from which the Bibliotheca Alexandrina digitized about 6,000 manuscripts and made them available for users internally (Ghail, 2005). Moreover, the library published five groups of CD-sets; each set included seven manuscripts that covered different topics. The first CD-set that has been released in 2001 and is comprised of a collection of manuscripts on literary works. The second set represents some Arabic manuscripts that were kept in the Mosque of Abū al-'Abbās al-Murṣī in Alexandria, and was published in 2003. The third set comprises a remarkable manuscript collection of the Religious Institute of *Smaḥa* in Alexandria and the fourth set features selected manuscripts from the Uppsala University Library's collection. The fifth set is a collection of some of the Arabic manuscripts of St. Catherine's Monastery in Sinai.

In 2004, there was another major digitization project that took place in the Central Library of Islamic Manuscripts, also known as the *Awqaf* Library.⁵ The main objective of establishing this library was to collect manuscripts from mosques that fall under the Ministry of Islamic Endowments mandates. Consequently, there were two large collections of manuscripts added to the library, the first from the mosque of Abū al-'Abbās al-Murṣī in Alexandria, and the second collection came from the al-Ahmady mosque in Tanta. After that a committee of experts travelled to collect other smaller manuscript collections from different Egyptian provinces, while a group of catalogers and conservation specialists were working on manual cleaning and cataloging the manuscripts. The last piece added to the library was one of the biggest Quranic manuscripts in the world that previously had been housed at the Hussain Mosque in Cairo.

In addition to the four main projects that have been undertaken in Egypt, there are some digitization projects, which are relatively small and basically focused on select manuscripts. The first project has been undertaken in 1997 by UNESCO's Memory of the World Programme in conjunction with the Egyptian National Library. In this project, a group of Arabic scientific manuscripts from within the library collections were digitized and published on a CD. The digitization and the development of this product was the responsibility of the Regional Information Technology and Software Engineering Center (RITSEC).

Another significant project was carried out in 2006 by the National Library of Egypt in cooperation with the Library of Congress within the framework of the World Digital Library initiative (van Oudenaren, 2007). About sixty titles were digitized in a digitization center that was equipped by the Library of Congress. In addition, staff training was delivered by international experts in the digitization field.

The Thesaurus Islamicus Foundation was founded with clear mandates of protecting Islamic manuscript collections and supporting those who work with them. Since the time of its establishment, the foundation has funded and participated in different projects for cataloging, digitization, and preservation of Islamic manuscripts in different countries.⁶

One of the Foundation's major undertakings is that of the Dar al-Kutub Manuscript Project under which it has agreed to modernise the physical space

⁵ Waqf generally means the detention of specific thing in the ownership of a mosque, school, or family and devote its profit for the charity use. In the Islamic manuscripts context, some scholars or their families used to donate their manuscript to a specific school or mosque to be used by other scholars and/or their students.

⁶ More information about the Thesaurus Islamicus Foundation, can be found at <http://www.thesaurus-islamicus.org/index.htm>

for the entire manuscript division of the National Library of Egypt, and the imaging department has been outfitted with state-of-the-art digital equipment for high-quality imaging. Moreover, a thorough training is to be provided for the manuscript staff in preservation and digitization. Key components of the project are still in development, such as a fully functioning server network to host the catalog and digital repository. The initial project will focus on the Mamluk Qur'an Manuscript collection, which was entered into the UNESCO Memory of the World register in 2013. As the UNESCO (n. d.) document explains, the collection contains:

One hundred and forty Mamluk Qur'an manuscripts and bindings that can be securely dated to the Mamluk period (1250–1517 CE) by colophons and endowment and dedicatory statements. During this time, Cairo became the cultural, religious, and intellectual center of the Islamic world. The manuscripts are almost unmatched for splendor, opulence, and size in the history of the Islamic arts of the book and they are key to our understanding of developments in Islamic calligraphy, illumination and bookbinding not only in Mamluk Egypt but throughout the Islamic world.

Challenges and Problems

This section examines the problems and challenges of digitization projects in Egypt taking into consideration major projects as well as smaller initiatives. The traditional and modern methods for digitization will be examined, as they is one of the challenges. In addition, storage procedures for the digitized materials, and access to these digital materials will also be examined.

Broadly speaking, digitization problems in Egypt could be divided into two main categories: a) general and administrative problems related to the libraries themselves; b) technical problems related to digitization processes, cataloging, metadata, and accessibility.

General and Administrative Problems

The increasing cost of the manuscript digitization is one of the major problems faced by the manuscript libraries in Egypt. None of the libraries mentioned above have a dedicated budget for digitization. However, some of them have obtained grants from various institutions. As mentioned in the previous section, some of the projects that were undertaken in Egypt have been sponsored by either international bodies or local institutions with financial independence. For example, the Library of Congress and Thesaurus Islamicus Foundation

funded different digitization projects at the National Library of Egypt by granting the equipment and giving training to the staff. As yet, there is no information available about the total cost of these projects. Another example is the Awqaf Library, which received a donation from Juma'a al-Majid Center for Culture and Heritage⁷ in the form of equipment and staff training.

The institutions that own manuscript collections in Egypt do not allocate funds for digitization projects in their budgets, or it may be that it is not one of their top priorities for spending. A temporary solution for this problem is provided by grants for participation in international digitization initiatives. Currently, there are many institutions that provide funds and technical support for manuscript digitization projects in order to make this heritage available to wider audiences and for research. For example, the British Library, the Library of Congress, the Islamic Manuscript Association (Cambridge), and UNESCO are all funding and managing manuscript digitization projects in many different countries. However, a long term solution could only be found by implementing a national strategy for manuscript digitization and preservation. This could only come out of collaboration between high level government representatives, experts in digitization, and manuscript curators.

As a result of the absence of a national strategy for digitization in Egypt, there are no clear selection criteria to prioritize manuscript collections that are in urgent need of digitization. While this might be a difficult task because of the magnitude of the Egyptian collections, identifying where to start a digitization project and how money should be spent is one of the necessary steps. It was found that some digitization projects in Egypt focused on the content, such as the digitization of scientific manuscripts in the National Library as well as at the Awqaf Library which has about three hundred scientific manuscripts (1.9%) of the collection. However, there are a good number of autograph manuscripts, illuminated manuscripts, and severely damaged manuscripts which will be deteriorating in the course of time. All of these must be at the top of any digitization project's priority list.

One serious challenge is the resistance from curators and managers who are in charge of some manuscripts libraries or collections. They do not trust technology and digitization in particular. One of their major contentions with digitization is that there is a great possibility for forging a digital copy of a manuscript which might lead to fabricating part of Muslim history. Another

⁷ It was found in 1989 by Mr Juma al Majid who aimed to make it a culture and knowledge center to preserve Muslim heritage. Currently, the Center is considered one of the landmarks visited by all those who go to Dubai.

reason to reject digitization projects, from their point of view, is the ownership and copyright issues of these manuscripts especially when it goes online and can be easily downloaded. This challenge can be easily tackled if an intensive training for curators and manuscript specialists is provided. The training should cover the importance of digitization and how they could use it to disseminate information about their manuscript collections which would clearly indicate that these libraries own the copyrights.

Access presents technical and/or administrative challenges in some libraries in Egypt. The accessibility of the results of some projects is still not efficient as they are available only on multimedia disks. These valuable projects need to have an online access point so that a wider range of users can request and use them. Despite the fact that some libraries provide digital access to manuscripts, researchers are required to go through a long process of procedures and approvals in order to view the digitized manuscript. In the case of the Awqaf library, the digital copy is provided using reader software that was originally designed for the architectural display of Egyptian mosques.⁸ In other words, all digital images have to be attached to the very software that allows you to browse the manuscripts, and any problem that happens on the software hinders access to the images. Online access or at least making an online request portal to obtain manuscripts is the optimum solution for this problem. The libraries still will be able to request as much information as they need to identify the requester for the sake of record-keeping and statistical purposes.

In summation, the lack of a national policy for manuscript digitization is a major problem for their future preservation and accessibility. Such a policy would be considered the optimum solution for most of the other problems mentioned previously in this chapter. This national policy should include a strategy for manuscript digitization and workflows that comply with each library's resources.

Digitization's Technical Problems in Egypt

In general, the infrastructure for digitization projects is considered the main challenge that affects digitization projects in Egypt. Although digitization initiatives were discussed in the early 1990s in Egypt, only the National Library of Egypt has a well-equipped laboratory that was donated by the Library of Congress when they cooperated on a digitization project. Other libraries however

still lack the technical resources to implement a full digitization project. An explanation can be found in the cost of equipment and training and the strained financial resources of these libraries.

With regard to storage options, some of the projects used multimedia disks (for example, the Bibliotheca Alexandrina and The National Library), or used external memory devices (the Awqaf Library). In both situations, there was still limited storage space, which meant in most cases that manuscripts could only be digitized per request which has long-term consequences. The libraries should consider servers with high capacities with digital archival plan including a backup policy.

Regarding accessibility, only two projects have a website where they display some of the digitized manuscripts. However, in light of the open access attitude taken by other manuscript libraries in the world, Egyptian libraries need to consider an access plan for the digitized manuscripts. This plan should include even the un-cataloged manuscripts, as uploading some of these manuscripts on the official website of the institution would not only help in promoting the collections, but could also attract 'crowd-sourced' cataloging contributions from experts in other countries which would reduce the in-house cataloging and metadata costs.

Another major problem is the differing cataloging practices and the lack of metadata standards within the implemented projects. There are many reasons for this tendency: firstly, the different cataloging practices amongst the institutions; secondly, the lack of qualified manuscript catalogers; and thirdly, the newness of the technological solutions such as bibliographic databases and metadata applications in the Egyptian libraries.

The lack of qualified manpower in this field has two dimensions, both of which are considered a big challenge for digitization projects. The first challenge is the paucity of manuscript catalogers who are available in Egyptian libraries. Most individuals with these specialized skills often chose other fields to work in, not cataloging.⁹ The second challenge is a lack of specialists in digitization who are capable to work with the given nature of the manuscripts. This could be easily remedied by providing training to the previously mentioned specialists and by enhancing their awareness as well as their skills. It is worth mentioning that the number of qualified specialists in digitization has been increasing in the last few years, especially with the increased number of digitization projects.

⁸ مؤسسة مكتبات المساجد، وزارة الأوقاف المصرية، 8

⁹ Tanahi, Muhammad Mahmud, "تعدد التخصصات المكتبات المساجد", (Cairo: The Institute of Arabic Manuscripts, 1998), 32 p.

Another related aspect is the cataloging complexity of manuscript collective works, known as collection of codices or *majami*. These *majami* always include different pieces of work and are not necessarily on one single subject. Some of these works might include more than 100 titles that bound together for purposes of education or preservation, and the cataloger will need to create 100 records. For instance, to implement a digitization project for these collective works, we will need to know whether they will be accessed in groups or individually. Also, it should be clear how the metadata records will be linked to separate pieces inside the collective volume. It is worth mentioning that the Egyptian National Library has the largest collection of *majami*, which they started cataloging a few years ago after they received funding and training from Al-Furqan Heritage Foundation in London.

With regard to metadata schemas, one could argue that 90 % of manuscripts libraries in Egypt have not been using the standard schemas of the field, not even MARC21. The adoption of new schemas will make it even more difficult for these libraries to catch up.

Conclusion

Although Egypt is one of the richest countries in terms of manuscript collections, one can argue that there is lack of attention towards the digitization of these manuscripts. There have been a few studies that have focused on the impact of digitization as well as the planning for such projects. Researchers and practitioners should be encouraged to carry out more research on this topic, elaborating the importance of digitization, different techniques and strategies of digitization, and how to implement a successful digitization project. Also, on the practical level, only a few projects have been implemented in the Egyptian libraries, and there were many challenges and obstacles negatively affected these projects. Although improving accessibility to a wider range of researchers is one of the main reasons for digitization projects of manuscript, this is not the case with some of the Egyptian projects.

There are many administrative and technical challenges that affect the undertaking of digitization projects in Egypt some of which are, budget, lack of planning, absence of infrastructure, and training. To overcome these challenges and problems a national strategy should be developed. In order to convince any grantors to finance one of the digitization projects, institutions should have a very clear vision of how they will make these manuscripts accessible.

In conclusion, preparing a national digitization strategy is considered one of the key solutions to overcome the majority of the above challenges. To be suc-

cessful, this strategy needs to be developed by the government ministries concerned, with the advice of a group of experts working in the manuscripts field, including curators, catalogers, digitization experts, conservators, and researchers. The process of implementing this strategy should be delegated to the institutions that own the manuscripts. The plan should address the key challenges that face the digitization project, and find solutions for these problems. It should include information on the principles for digitization of any heritage collection, including the access policy for completed projects, and the development of the specialist manpower required, as well as identifying priority criteria to select manuscripts to be digitized.

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