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The Role of Information Technology in Preservation of Manuscripts

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ABSTRACT

This is a study of the use of information technology in the digitization of manuscripts in Yemen. The study begins with brief history of emergence of Arabic and Yemen manuscripts, then it discusses the use of automated systems in the treatment of manuscripts, and digitization Arabic manuscripts and characteristics and technical specifications required for the digitization process and requirements of physical, human and financial factors. Then it describes the goal of the digitization process, and finally the study presents factors the main findings.

Introduction

The Arab world is replete with a lot of libraries and archives and museums with significant manuscripts. So it became the focus of a large number of scholars and researchers, Arabs and foreigners alike. Scientific and technical, value in addition to being an important part of the national heritage of the various Arab countries. To maintain them means to maintain national identity with all its dimensions in a world facing the changes and the emergence of new concepts and values represented by globalization. It has become a threat to the various human cultures and they are threatening the privacy of people.

Because of this importance with the advent of modern technology it has become imperative to maintain manuscripts from damage and loss using the techniques of particular digitization of manuscripts. Then it can be made available to the largest number of beneficiaries.

What is a manuscript?
• It is a written or typewritten composition or document as distinguished from a printed copy; also: a document submitted for publication. (1)
• Manuscripts are a kind of books written by hand represent Manuscripts primary sources of information are documented. They belong to studies various topics, and support a number of researchers in whole or in part of information contained in the manuscripts (2)
• It is a book or other document written by hand. (3)
• A hand written manuscript is written information that has been manually created by one or more people, such as a hand-written letter, as opposed to being printed or reproduced in some other way. (4)

Automated Information System: (AIS) means an assembly of computer hardware, software, firmware, or any combination of these, configured to accomplish specific information-handling operations, such as communication, computation, dissemination, processing, and storage of information. Included are computers, word processing systems, networks, or other electronic information handling systems, and associated equipment. Management information systems are a common example of automated information systems. This assists in gathering information (5)

Digitizing or digitization: It is the representation of an object, image, sound, document or a signal (usually an analog signal) by a discrete set of its points or samples. The result is called digital representation or, more specifically, a digital image, for the object, and digital form, for the signal. Strictly speaking, digitizing means simply capturing an analog signal in digital form. for a document, the term means to trace the document image or capture the "corners" where the lines end or change direction.

Emergence and development of manuscripts: Developed manuscript industry among Arab Muslims is unprecedented art. It is characterized accurately with decoration gilt and attractive images and creative colours and the beauty of its lines. It is an evidenced conclusion reached by the art of making the manuscript in the Islamic era. Care of quality line is normal in the Islamic world. Calligraphers enjoy great prestige, especially in Iraq, Iran, Egypt and Turkey for being advantage by personal manuscripts of the Koran as well as copies of manuscripts, literature and poetry (6)

The Arabs since the Islamic and particularly the Abbasid era took care of manuscripts, books and libraries. Movements flourished in translation and authorship. People used to buy books and wanted acquisition and care of books. They also set up public libraries, school that were full of millions of books and manuscripts, Durant, says: "I have not a passion for acquisition of books and manuscripts in another country in the world except in the country of China including the land of Islam in these centuries, when he arrived to the height of his culture, and a number of scientists in thousands of mosques were scattered in the Islamic countries of Cordoba and Samarkand. It was not less than the number of columns (7)

Muslim manuscripts that are the only way to preserve what was produced by the Arab mind. Islamic works and letters, books about God, Quran and sayings of the Prophet, (peace be upon him), including masterpieces are precious they have left a technically great a legacy, and are enough to point out the size of this Islamic heritage. They are kept in the world's museums and libraries, as there is in Istanbul alone. About 124 thousand of rare manuscripts are mostly taught other than what is in Egypt, Morocco, Tunisia, India, Iran and other museums and libraries throughout the world (8)

Manuscripts in Yemen: Yemenis claim that their country has a huge fortune and wealth of manuscripts, but they disagree on the exact figure or the size of these treasures. It is estimated by researchers like German Orient a list (Ario said), who worked three years with expert volunteers for authority monuments and manuscripts Yemeni number of manuscripts is almost a million. It manuscript indicates concerned house manuscripts to conflicting information about estimates of the real size of the manuscripts. There are those who say that number is up to (300) thousand manuscripts Underscoring many historians that the ratio exceeds this figure much, especially with the recent discovery of the manuscripts of the Koran that was found by chance in the surface of the Great Mosque in Sana'a in the year (1972), which was estimated at (40000) manuscripts, including (12000). There is a parchment leather Koran. (9)

Yemeni manuscripts are spread in hundreds of libraries in the Eastern Library located inside the Grand Mosque in Sanaa and Ahqaf library Tarim Hadramout. A visitor to the Eastern library finds more than (3000) manuscripts of various sciences and (4000) Koran manuscripts. The oldest and most important Quran of Imam Ali, shared in his writing companion Zaid ibn Thabit and Salman the Persian. This Qur'an is within seven copies of the Koran written in Medina and then sent to Islamic countries and this was the Koran as the share of Yemen. The rich Eastern Library many Katz manuscripts dating back to (103) of migration, such as Diwan (The Rumah) has It is written in Kufic script, as well as the book "singer" of Qazi Abdul Jabbar bin Ahmed Sheikh Isolationists d. (415 AH), which, according to the words of concerned here, the only copy in the world. There are some gold blocked manuscripts such as "dictionary" Firouzabadi as well as "evidence ambulance Scout" of Sheikh Khader Benata Musli, who completed and authored (1003) AH.

The library Ahqaf Tarim Hadramout province contains two large and important proportions of this heritage. Reports indicate that it includes (6000) thousand manuscript folder. The number of titles goes to more than (11000) book titles and message and discuss the various arts and knowledge. In an attempt of Yemeni authorities to collect the rest of the manuscripts in the country and that possession citizens and supervisors have worked on (Dar manuscripts). This construction dates back to the (1980 m) and in cooperation with the Ministry of Awqaf they collected these manuscripts and kept them, maintained and displayed inside house (10)

What is electronic document management?
Electronic document management is the term used to describe the tools and process for managing electronic documents and records. An electronic document management system (EDMS) is asoftware of tools specifically to describe and manage un structured electronic information in a controlled and consistent manner. The system will manage such things as word-processing documents, spreadsheets, images and emails. It does not typically manage database, but can be configured to search across them.

The benefits of implementing an EDMS include
1. Improved efficiency and responsiveness to internal and external clients.
2. Improved information sharing between staff and officers
3. Reduced liability /risk management
4. Improved information security
5. Flexible security at the document level, not just at the directory level
6. Version control
7. Improved recordkeeping and information administration
8. Improved information processes and audit ability
9. No duplication of documents
10. Improved access to information (11)

PROCESSING REQUIREMENTS:
Processing requirements address the choices of software and hardware, such as scanners, computers and monitors, resolution, speed, single- or double-sided scan, document

delimiters, level of color accuracy, image quality, corrections criteria and procedures, type of character recognition, format, indexing, and standards regarding metadata

Scanners
In any digital imaging lab it is essential that the correct scanner be chosen to meet imaging needs. Several types of scanners such as flatbed, drum, and film scanners are available. High speed scanners are used for standard paper sizes typically batching documents to optimize scanner use. Libraries that have digitized library collection materials have found that there is no single scanner that solves all digitization needs and that a variety of scanners are needed to complete digitization tasks spanning multiple formats. The type and condition of a document drives the scanner selection. For example, a flatbed scanner may be used for fragile, unbound documents or for rescanning, but for non-fragile, unbound items, a high-speed duplex scanner is optimal. Specialty scanners for bound books are available though usually at a greater cost.

Scanner selection is based on a number of criteria, including the following:
- Volume (average number of pages and images to be scanned)
- Scanner duty cycle (average number of scans recommended for a scanner model).
- Need for colour, black and white, or gray scale scans
- Resolution and format
- Document size single or double sided (also referred to as simplex or duplex)
- Scanner warranty
- Maintenance requirements (12)

RESOLUTION
Resolution is the "density of pixels captured in the digitization of an image" when digitized. 3 Images of library materials can be captured at anywhere from 300 dpi to 600 dpi, depending on the nature of the documents. The resolution should be determined according to the type of document being scanned, with quality of the image taking precedence. .

FORMAT
Documents are typically stored as Tagged Image File Format (TIFF), Portable Document Format (PDF), Portable Document Format for archiving (PDF/A), or Joint Photographic Experts Group (JPEG) files. The preferred format depends on the document type. Both TIFF and PDF/A formats will store a true facsimile image at no additional cost. Table 2 summarizes the advantages of TIFF and PDF/A formats.
 Advantages of TIFF vs. PDF/A (13)
The software is free and neither format has a cost advantage. Most of our research findings indicated libraries using the TIFF format for digitized library materials, but in many cases, those recommendations were published before the introduction and increased usage of PDF/A. Either TIFF or PDF/A format are acceptable formats to use for library materials. JPEG is another file format that is used and may be considered for storing library digitized materials that are in colour.

Other imaging formats (for example, GIF, JPEG and bitmap) are available, but these are not prevalent in the marketplace at this time.

Computers
The computer used for any scanning station must be able to handle very large files, which can be memory and processor intensive. Therefore, the computer should have adequate Random Access Memory (RAM) and disk space. The image-processing speed will have a direct impact on the workflow and the speed of the scans. A personal computer (PC) with a minimum of 2 GB of RAM should be used for image capture and quality control; this will also accommodate new operating systems software, which requires more RAM storage devices. Digital images are voracious. In no time they eat up all the space on the system disk. For working in digital imaging field, one has to have enough capacity for storage, editing, backup, archive etc.

1) Hard drives: Graphic professionals recommend a minimum of 500MB storage space for graphic system depending on the type of work. Speed of hard drive is measured by seek time and by transfer rate. Faster the hard drive, lower the seek time.
2) Removable hard drive: It can be used for backing up digital images & storing files
3) Optical drive: It can store data between 500MB - 1.3 GB.
4) DAT drive (Digital Audio Tape): It is one of the most economical media to store data. It can be 60, 90, or 120 meter in size. It can store 1-2 GB data. Newer models can store up to 8 GB data. With DAT archiving and retrieving data is not fast because information is recorded and accessed sequentially
5) CD ROM drive: It is an essential peripheral for digitisation. To use a CD ROM, to view photo images, XA (extended architecture) is needed, which enables to add new photo CD images on CD ROM until its storage capacity is full

Technical Specificities to digitize manuscripts: There are multiple types of Arabic calligraphy, rather more than one hundred kinds, but the most commonly used are: Kufic, a third, alejaza , alnaskh and Moroccan, etc (14)

The process of digitization takes two forms of foundations. Digitization is a picture "Mode Image" and digitization in the text is "Mode Texte". Because of the specificity of Arabic calligraphy written in particular, privacy Arabic manuscripts in general, it is difficult to adopt digitization in the text. A digitization image for special reasons is the same manuscript itself, and for other reasons, related to digitization technology itself.

METADATA: To determine the metadata for manuscripts and after consulting a group of specialists, Arabs and foreigners in the field of Arabic manuscripts, table (03) below summarize the results that have been reached and are containing details of selected manuscripts for digitization of hand. They select the fields and branches of the fields necessary and developed to help in the extraction of information from the other hand.

Purpose of digitalized manuscripts:
The main purpose is to enable the use of such originals that cannot be consulted without a visit to the specific repository, as also those originals that are fragile or damaged and where technology is needed to reveal the content and shape.

The purpose is, in the first place, to create accurate reproductions of the original manuscripts on a long lasting medium. These reproductions need to satisfy both users of today and future potential users, and therefore, both must be of high quality and possess a physical stability that can be maintained over time

Findings: Although the parameters and prospects of information technology and employment in the field of storage and retrieval of information back to the end of the sixth and early seventh decade of the twentieth century, there is some information systems based on computers in the United States. The interest of Arab States is in the techniques of modern information and employment in the service of heritage. Arab manuscripts started since 1992 in the information Center of the Egyptian Cabinet, the first information system for Arabic scripts

The Yemeni National Center for Documentation was issued in 1991.The center started the electronic archiving of documents in 2005. That was the first legislation to deal with national manuscripts. In addition, a Yemeni delegation including a number of employees and trainees at the national center of documents had been sent to France for training on documentation and electronic archiving in order to conform to other states.

Recommendation:
• The National Centre of documentation and Manuscripts, should be improved in using provision structure, human and material resources to support its functions.
• Provision of internet infrastructure with large band width to insure adequate network connectivity.

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