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Digitization of audio-visual documents "study in methods and methods of conservation and maintenance"

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Abstract
Audiovisual documents are part of the community's memory and cultural heritage and must be preserved as a whole by cultural property. The functions of audiovisual archive centres are varied through the development of tape collections and recordings, meeting the needs of researchers and beneficiaries, preparing indexes, information services, procedures and technical acceleration, maintaining documents and consciousness, and raising people ' and other functions. The study aims to highlight the importance of archival audiovisual documents at archives' centres. This study addresses the importance of audiovisual archival documents through four core themes. First, emphasis is placed on the concept, relevance and diversity of these documents. Second, conservation and maintenance methods are recognized, with a focus on the technical procedures for organizing and processing those documents. In the same vein, the functions of audiovisual archiving centres are monitored and analyses, with a focus on improving conservation and storage conditions.

Keywords: Archival documents, audiovisual documents, preservation and maintenance, digitization, digitization process

Introduction

Audiovisual heritage shone as a key element in cultural heritage formation during the twentieth century, with audio-visual recordings emerging (Fuentes-Luque, 2019 [17]; Tabah, 2017) [29]. Although the audiovisual was not new, its importance has risen as an artistic value, entertainment and information transfer tool (Alghnimi, 2018 [2]; Bates, 2016 [6]; Bishi, 2022 [7]; Chaume, 2016) [10]. In some cases, the value of data transmitted by voice and image is greater, especially when there is a language or readership barrier (Chiaro, 2009) [12].

Audiovisual material may be the only appropriate means in the context of the oral or audio transition of culture and the arts, as well as in documenting musical performances and narratives of oral history. (Schüller, 2008a) [49]. The importance of this material also lies in live-streaming recordings that enable the juvenile's timely detention (Ashwathappa *et al*., 2020) [3]. In the case of current news and events, the impact of audiovisual material is striking, providing an effective means of transmitting and understanding events in immediate time (Visell *et al*., 2009) [31].

The proliferation and evolution of modern technologies has meant an increase in the role of audiovisual media in communication, information and culture (Schüller, 2008b [50]; Traubhaar *et al*., 2012) [30].

The proliferation and evolution of modern technologies has meant an increase in the role of audiovisual media in communication, information and culture.

This topic has been selected for several reasons of outstanding importance:

1. The theme's selection reflects the important role of audiovisual documentation in the light of significant technological progress and the development of digital media. Highlights how society benefits from these modern technologies in the collection and preservation of cultural heritage.
2. The subject's choice is aimed at encouraging researchers to study this vital area, given its importance as an archival and cultural heritage of society. Enhances deep understanding of audiovisual documents and their role in the formation of our cultural identities.
3. The topic aims to raise awareness among officials of the National Documents House of the importance and value of audiovisual documents as an integral part of society's cultural heritage. Highlights its role in the collection, organization, preservation and maintenance of these precious documents.
4. The topic stresses the importance of communication and cooperation between officials of the National Documents House and audiovisual archives centres in public and private institutions.

Seeks to highlight the legal aspects of the legal filing of audiovisual documents in the National Archives.

1. objectives of the study:

The importance of this research study is due to the theoretical framework of audiovisual documentation, which is one of the most important topics in the collection and preservation of audiovisual heritage, and which must be taken care of to achieve competitive value, the role of institutions and archive centres in preserving and maintaining them, as well as the digital process that contributes to the preservation and storage of these documents and ensuring their long-term survival.

This study aims to

- Publicize audiovisual documents and their importance and forms.
- Publicize the functions and functions of audiovisual archiving centres.
- Monitoring the basic stages of the organization of audiovisual documents.

- Monitoring of substantive procedures for handling audiovisual documents.
- Monitoring methods and methods of preservation and maintenance of audiovisual documents.
- Publicize the digitization of audiovisual documents and their requirements.

Theme 1: Audio-visual documentation.

In the age of modern technology, audiovisual documents have come to play a prominent role in shaping culture and communication. These documents have great power in transmitting information and contributing to enriching history and heritage and documenting important moments. In this context, we will discuss the understanding of audiovisual documents and their essential role in our current reality (Nicolaou, 2021) [40].

Paragraph 1: Introduction to audiovisual documents and their importance.

1. Definition of audiovisual documents

Audio-visual documents are documents that carry audio-visual information, such as audio recordings, videos, films and film miniatures. These documents are used to produce content for audiovisual institutions and archival centres (Chaume, 2016) [10].

2. Document concept: The document is defined as any material with information whether it is a manuscript paper, a moving static image or a visual audio recording (White *et al*., 2021) [34].

We note from the foregoing that the documents are of two kinds in terms of the nature of their content:

- **Text documents:** Which provide us with information in the form of a written text to be read such as books, periodicals, indexes and correspondence.

- **Non-text documents:** may include text in part but require us to read, watch and listen, using special devices, which are three types(Zong *et al*., 2021) [36]:

- **Audio documents:** "Documents that rely solely on the sense of hearing and are important and documentary sources of information because they rely on the recording of oral information, often audio recordings on cylinders (audio disks), and audio tapes of various forms".

- **Visual documentation:** Documents that are received solely on the sense of sight, i.e. using the eye to understand the meaning, information, ideas and opinions they contain, such as film slides, transparent slides, photos, maps and posters.

- **Audiovisual documents:** documents that depend on both hearing and sight perception of the information and meanings they carry. Examples include film films, talking films or video police.

We summarize that the document is any material that carries information, including what is used directly via hearing or sight sensors or both, and that requires a way to read it such as films, tapes and videos.

1. Definition of audiovisual documents

- **Linguistic definition**

The dictionary of documents and archives terminology defines them as "audio and photo recording on archived cylinders or tapes (Guyot *et al*., 2019) [18]. Audiovisual documents are also defined as "material that depends on the understanding of its meaning and features on the sense of hearing and sight together"(Karppinen and Moe, 2019) [22].

- **Terminological definition**

Ghaleb Rather than Nawasa defines us as audio-visual documents "categories of non-traditional information receptacles based on recording the sound and image together, in one appropriate technological way and made with varying sizes and speeds, such as videos and films"(Nicolaou, 2021) [40].

It is defined as "material transmitting information by voice and image rather than by written text, which includes audio and video recordings, the most of which require special devices to be viewed and heard".

3. Concept of archival documents

Archival documents mean "any written or photographed document, photograph, cinematography or any audio or visual recording, which records a particular activity, is issued or received from any official department or institution, and which is retained for its importance and usefulness to that institution"(Caswell, 2021) [9].

4. Audiovisual Archive Concept:

The archive is defined as ": the collection of archival documents organized through the technical processes of acquisition, classification and indexing, which were issued by the various administrative units as a result of their daily activity, and then no longer needed in these departments, but the vision of their retention and preservation as important, in order to facilitate their utilization and the provision of services required for the beneficiaries (Lanskoy, 2019) [24].

Second: The importance of audiovisual documents.

Audiovisual documentation is of great importance to the work of the archival institution, and its importance lies in the value of the information it contains and provides for the work of other sections of the archive and, in particular, the programming section, which is the essential part of society's audiovisual memory(Fourati *et al*., 2020a).

The importance of audiovisual documents is highlighted in several considerations:

- Audiovisual documentation is the most valuable asset of any archival institution's audiovisual heritage. As it preserves the voice and image of live scenes of events and activities that society has known in various areas, Recalling many facts, facts, ideas and statements, they are a source of history, of learning and of rethinking past events and actions more objectively, as they represent a nostalgic past and a reminder of great achievements. Audiovisual documents are crucial in preserving the archive's old and new audio-visual documentary inventory.
- Audio-visual documentation is used within television for the production of programmes, varieties, documentaries, news tape and for re-broadcasting and to integrate programme extracts into many programmes, needed by media professionals, directors

and programme developers and that these materials are still valid for broadcast or display, Not only does the audiovisual archive contain images and audio material from the past, but it contains valuable programmes by which programmes can be made for the current or future generation, so they must be preserved.
- Audiovisual documentation is an essential tool for beneficiaries to create informed and long memory in order to facilitate their work and tasks. Cultural and media workers, especially television, often need a collection of materials, documents and information stored in the archives' portfolio, which usually have its own connotations and benefits in archival work, thus serving as the starting point for beneficiaries and researchers to carry out their own work.
- Audiovisual documents are regarded as the basis for written documents because of the abundance of information provided by them to scholars and researchers through hearing and sight.

Second paragraph: Forms of audio-visual documents.
We learn about the forms of audiovisual documents on which archive centres rely, highlighting their historical evolution (Carbajal and Caswell, 2021) [8].

1. Videotapes
They are both audio and video recordings on a magnetic tape, the display of these tapes requires the presence of a playback and projector, the duration of the video is two to four hours, and the television relies heavily on these tapes to produce its software.
Videos are also available in another format known as Video Cartridge, a small case in which the tape moves on one reel.
Video recordings have evolved to match the work of the television studio, requiring a superior image of quality, performance commensurate with the professional and television production work, and the types of analog videos used in television include:
- 2-inch (2-pouce) tape
- Tape 1 inch (1puce)
- ¾ inch tape (U-matic ¾ pouce).
- The ½-inch tape known as Betacam.
- Tape (Betacam Sp.

2. Films
It is a sequential series of images in a continuous and vertically arranged manner on a transparent film ribbon and during the screening gives a sense of motion with an accompanying sound. The films are used as sources of information that showcase ideas and concepts in an interesting manner, as the movement element has added an important dimension to the films as well as the sound and image, so they are an expression of reality in all its details.
And it was the real start in film production between 1825m-1839m by "Joseph Niepce" and "Daguorre Louris" in France, where their attempts succeeded in producing and recording sequential images, and then introduced modifications and developments after increased competition between inventors in this field, the photographic devices and the material on which the images are recorded developed, and the cinematography machine was invented by Thomas Alpha, using streamlined cinematographic cameras, produced the first film by the brothers. "Lumière", followed by developments also producing a 1914 cartoon film and recording audio on the 1922 film (Smith, 2022) [28].
Film tapes are divided into several types depending on the film's presentation (Sikov, 2020) [27]:
- 70mm film
- 65mm film
- The 35mm film
- 16mm film
- 8mm film

3. Audio tapes
The registration bar industry has made tremendous progress, becoming one of the advanced industries. Scientific methods are used in the production of defect-free plastic layers for recording straps, where the thickness of these layers is between 1.5 and 0.5 mm in open straps, and less in cassette and cartridge. These layers are made of strong materials such as "polyester," and each bar has two sides, one polished and the other bleak (Rumsey, 2021) [46].

4. Laser tablets
It is a modern media for storing information and carries huge amounts of data in different forms, whether text, audio or visual. It is a silver-colored flat disk based on laser radiation technology for storing information on it. It is read by a computer connected to the CD-Room Drive. It is called the following: CDs or CDs, optical discs, or silver discs.

Theme 2: technical procedures for the organization and processing of audiovisual documents.
It is understood that archival institutions and centres, so as to maintain survival and continuity, It needs to collect, preserve and store its information, and then try to retrieve everything that will best serve its functioning; However, such materials are of no value or usefulness unless they are preserved, regulated, seized and technical tools that allow for their recovery in the easiest way and in the least possible time (Ibrus and Ojamaa, 2020 [20]; Rakemane and Mosweu, 2021) [43].
In this research, we will try to learn about the functions of audiovisual archiving centres and their role in the organization and preservation of audiovisual documents on television.

Paragraph 1: Functions of audiovisual archiving centres.
- Archive preservation (Mulauzi *et al*., 2021a [38]; Rakemane and Mosweu, 2021 [43]; Schüller, 2020a) [47].
- Beneficiary's service
- Technical procedures
- Vessel maintenance
- Preparation of indexes
- Training and qualification of the Centre's staff

Paragraph *2*: Technical procedures and stereotyping stages for the preservation and maintenance of documents.
1. Basic stages of the organization of audiovisual documents.
The organization of audiovisual documents passes through basic stages of archival work (Akhmetshin *et al*., 2019) [1]:
- Supply and Selection Phase
- Technical processing phase
- Conservation phase
- Broadcast and retrieval phase

2. Technical procedures for handling audiovisual documents

Audiovisual archiving centres must undertake technical actions to facilitate the use of archival materials such as indexing, detection, classification and extraction, in accordance with scientific methods based on international standards (Fourati *et al*., 2020b [14]; Kubik and Kwiecień, 2020) [23].

- **Descriptive indexing of audiovisual documents:**

Cataloguing is defined as: "The technical preparation of information receptacles, from books, periodicals, audio-visual materials, film miniatures and other sources of information, with a view to making such materials accessible to library beneficiaries in the most accessible manner and in the least possible time and effort".

The main task of the librarian or notary is to prepare the catalogue, which is the main tool for searching, retrieving and monitoring the library's balance, consisting of bibliographic recordings prepared in a rated manner to determine the form and content of each document in the balance (title, author...), and to identify access points through two basic procedures of the catalogue:

- Bibliographic description or descriptive indexing: which is closely concerned with the form of a physical pot of information, for example we find the key elements of the film description: title, author (director, screenwriter), collaborators (director of photography), production, production place, history, original bowl, language, color and others.
- Substantive analysis: This means analysing the content of the document in question or part of it in a brief and accurate form, in order to extract its extract and reveal it by translating its core concepts into topics. This process begins with accessing and examining the documents.

- **Detection of audio-visual documents:**

The process of analytical indexing or substantive analysis is one of a brief and accurate editing of data that distinguishes information in a document or collection of documents. This process begins with access to documents, not by reading them all, but by examining the information-rich part. The unveiling is limited to describing content for certain function words but does not meet the beneficiary's need to know basic aspects of movies, videos and others (Jaafar and Lachiri, 2019) [21].

The discovery is based on ADO: treasure, topics and classification headlist, controlled documentary languages aimed at avoiding tandem and multiple meanings, as well as on sophisticated software and artificial intelligence.

- **Classification of audiovisual documents**

Classification means the process by which a group of materials is divided into individual groups, so that each group consists of units with homogeneous characteristics or characteristics that make it a specific type (Fourati *et al*., 2023) [13].

The classification is used in audiovisual archive centres to regulate the content of archival documents. For example, television programmes are classified into news programmes, land-based cultural integration, educational programmes, entertainment programmes and others.

- **Preparation of extract for audiovisual documents**

The archive centres prepare extracts of television materials. This service is essential for providing sufficient data on the content of the audiovisual document (Schüller, 2020a) [47].

For the system for arranging information receptacles on the shelves, there are two systems:

a. Chronological order by receptacles.
b. Internal classification numbers of the center.

However, there are centres that prefer to arrange their documents according to serial numbers recorded in the book according to the date of entry to the centre rather than the method of arranging according to size.

Theme 3: Methods of preservation and maintenance of audiovisual documents.

With the acquisition of audiovisual documents, archive centres faced a new problem of preserving and storing such materials (Rakemane and Mosweu, 2021) [43].

Within this requirement, we will explain ways and means of preserving various forms of audiovisual documents and their storage requirements to ensure their good preservation.

Paragraph 1: Methods of preservation of audio-visual documents.

Preservation is the process of arranging and storing documents of various kinds in archive preservation receptacles, with a specific system that ensures their safety and easy access when needed, and their timely exploitation (Rochayanti *et al*., 2019) [45].

Save Videos: Old tapes need permanent care, good preservation and proper use in order not to damage or distort registration or lose accuracy and honesty. Therefore, the following must be followed:

- Keep the straps away from the soil that accumulates on the ribbon rollers, and away from temperature and moisture ratio.
- Recording on tapes is a magnetic process, so tapes must be kept away from magnetic fields that may be formed by the use of recording devices, electrical devices and other magnetic devices.

Save Movies: Films tapes preservation follows:

- Movies should be kept away from sunlight as well as away from chemicals that might spoil them.
- Movies are kept in special metal cans that can be placed on regular shelves or in film-specific casings because the weight of old films is heavy, especially 35mm films.
- Not to use films for a long time, and the emulsion layer that covers the film must be preserved because its corruption means the corruption of the film.

Some archivists add that, in order to preserve audiovisual documents in an appropriate manner, some considerations must be taken into account:

Placement of adhesive indicative clippers

- Which carries full information on the contents of these materials such as: the name of the author or director, the title of the series, the program or the film, the contents of the work in detail, the time and day on which it is recorded.

- You must record information about the materials and recording devices required for them and their specifications.
- The information on which it is recorded must be clear and specific.
- It must be left with sufficient additional distances to add any future information.

In fact, to the extent that the information recorded on the clippings is sufficient, it saves the beneficiary time and effort in identifying its contents, preventing any damage that may occur on the other hand (Schüller, 2020b) [48].

- **Canning & Packaging**

The canning and packaging process must fit the type of storage followed in the archive section. The wrappers must be durable and suitable for the preservation of audiovisual documents, and adequately protect the materials inside from dust, dust, moisture, heat and fracture (Aubourg *et al*., 2020 [4]; Malga *et al*., 2022) [25].

- **Security measures**

Action must be taken to maintain the security of audiovisual documents, especially for the small size of these materials and the ease of carrying them and concealing them or leaking them out of the section. It is recommended to avoid using radiation or any magnetic system to detect or monitor them, as this is harmful to tapes and movies, and the devices can be installed in their places.

According to the recommendations of the International Federation of Film Archives, the appropriate storage conditions for different kinds of films are defined as follows:

a. Nitrate Film
b. Acetate Film
c. Triacetate Film
d. 16mm polyester film tapes

Paragraph 2: Maintenance of audiovisual documents.

Conservation implies maintenance, as a set of actions taken to preserve old or historical receptacles during circulation (Matongo, 2020) [26].

Maintenance does not only rely on treatment and restoration procedures, but also on creating suitable conditions for the safety and preservation of audiovisual documents. The importance of caring for these documents and the necessity of maintaining their playback devices is undeniable. Therefore, the audiovisual archive center must inspect these materials from time to time, ensure their validity, restore them, and maintain their devices.

1. Save the original audiovisual documents

In this step, the archivist first follows good preservation and storage conditions, and sets a schedule for regularly inspecting audiovisual documents at fixed times using a viewing device to assess their quality or need for repair, as well as regularly examining borrowed films and recordings upon return. Additionally, care is taken not to use them on unsuitable or inappropriate display devices, and not to leave them inside the devices after the presentation is finished.

2. Repairing damaged audiovisual documents

Restoration is considered one of the pillars of maintaining and preserving ancient archives, and it involves repairing the defects in sound and image and removing them. However, it takes a long time, as one hour of programs requires approximately 40 hours of manual work for restoration (Mulauzi *et al*., 2021b) [39].

The Standard Arabic translation for the given text is: And audiovisual documents are exposed to two types of defects: the first type is serious and recurring defects, such as dust, noise, and scratches on films that cause image distortion, and the second type is rare defects, such as color variations, lights, and errors in previous conversions, and we usually resort to technology to repair these damages.

3. Cloning documents through digital technology:

Copies are used for the purpose of preservation, where digital copies are presented for circulation instead of the original recordings, using digital technology to transfer recordings onto electronic media, which greatly benefits in protecting the original document, as these copies are of high quality and are identical to the original(Chen *et al*., 2021) [11].

In this step, all videos and movies are transferred and recorded onto modern digital tapes, also known as digital tapes, using modern video transfer devices.

And among the most important digital tapes are the following:

- **Digital Betacam:** It is a digital video recording tape produced by Sony in 1993, with a maximum duration of 124 minutes.

- **DV (Digital Video):** It is a digital video tape produced in 1996, allowing for the recording of compressed digital video thanks to the discrete cosine transform (DCT) method. It also allows for direct video conversion on the computer for processing. This tape comes in several forms: (MiniDV, DVCAM (Sony), Digital8, DVCPRO).

- **Betacam MPEG IMX:** It is a videotape produced and developed by Sony in 2001, with a maximum recording time of 184 minutes.

- **XDCAM Disque:** It is a vessel of information used by digital cameras of the (XDCAM) type, produced by (Sony) company in 2003, and all (XDCAM) products use blue laser to record audiovisual content on a professional disc.

The process of cloning audio-visual vessels aims to preserve and store the original documents and deal with the copy.

Theme 4: Digitalization process and its requirements.

In the last section of this study, we learn about the feasibility of television institutions adopting digital technology in the field of audiovisual document archiving. We begin this section by discussing the process of digitizing audiovisual documents, defining the concept of digitization as the transformation of information containers into digital files on the computer, facilitating utilization, management, and long-term preservation. In this section, we also address the importance and objectives of digital archiving for audiovisual documents and the advantages and benefits it provides for institutions or archival centers (Alghnimi, 2018 [2]; Bishi, 2022 [7]; Vrana and Singh, 2021a [32], 2021b [33]).

Paragraph 1: The concept and objectives of the digitization process.

1. Definition of digitization

It is a process of converting symbolic signals or information in any form into a digital format that can be understood by computer systems or electronic devices. The term is used when converting information, such as text or images and sounds, into binary code, and digital information is easier to store, access, and transmit. Digitization is used by a number of consumer electronic devices (Bishi, 2022 [7]; Reis *et al*., 2020 [44]; Vrana and Singh, 2021a [32]; Zaagsma, 2023) [35].

In another definition

Digitization or digitization is: "The process of digitizing data, for processing by computer, and in the context of information systems when printed texts or images (whether photographs or maps) refer to binary signals using a type of scanner, which allows the result to be displayed on a computer screen".

The concepts of the term "digitization" vary depending on the context in which they are used, where digitization or digital conversion is observed to mean:

a. **In the context of computer:** convert data into digital form so that it can be processed by computer.

b. **In the context of long-range communications:** refers to the conversion of continuous analog signals into binary digital signals.

c. **In the context of information systems:** converting printed texts such as books, paper documents and photographs, and not printed such as audio and video recordings, into an automated computer-based format via the binary digital system (Bits), which is the basic information module of an automated computer-based information system, and this process is carried out using a range of specialized technologies and devices.

The concept of digitization process

is the process of converting sources of information of various forms of books, periodicals, audio recordings and animations (into a format read by a special language, namely, computer technology via the dual system considered a module, Bits) (Reis *et al*., 2020) [44].

In digital systems, information is encoded in the form of bits, consisting of zeros (0) and single (1), and reflects the passage or non-passage of power. In automated media, these figures are classified into eight-digit groups (bytes/Octets), each representing a letter, number or written symbol, and the sound is determined by a unit of time of 125 million m2, which is converted into bits. We apply the same technique to the picture: each initial point is represented by a number whose location, colour and intensity are determined.

Digitization of this concept also refers to the conversion of audiovisual material from analogue to digital, the complete disposal of all tape and the complete transformation into non-tape environment, in which visual audiovisual artwork is transformed into a computer file to which all computer rules apply.

Objectives of the digitization process.

The digitization of audiovisual documents achieves a set of objectives that can be summarized in the following points (Fourati *et al*., 2020) [15]:

- Protection and preservation of archival heritage from audio and visual materials and its development as a national cultural wealth.
- Representing the original, which is the most common purpose of using digital technology in archives, by making digital copies of archival material that can be used instead of browsing the original sources. The aim of the digital conversion process is to reduce the reference to the original documents, and to use the digital versions instead of them for easy reference and availability to a large number of beneficiaries, thereby reducing the likelihood of damage or loss.
- Work to organize audiovisual documents and enhance access to them no matter how fragmented and equally searched.
- Restore recorded content on old media and transform it into digital content to preserve it from damage, as well as improve the image and ensure its quality over the years.

Paragraph 2: Requirements for the digitization of audiovisual documents.

In this requirement, we address the requirements for digitization at audiovisual institutions or archives (Morel and Coalition, 2019) [37].

Audiovisual archiving centres are rapidly seeking to digitize their audiovisual archival documents, which in turn requires basic requirements to be provided for the digitization of documents. Digitization requirements can be summarized in four components: human requirements, financial requirements, physical and software requirements as well as legal requirements.

1. Human requirements

The digitization process is not done individually, but needs to be combined by various officials within the audiovisual archiving centres, as well as qualified and specialized staff in archiving, computing and information systems, who possess high skills and competencies in managing the digitization project with high quality (Paalman *et al*., 2021) [41].

The number of employees in digitization programmes varies from one institution to another, depending on the balance of the archive to be digitized, in addition to the institution's physical possibilities to assign competent workers for digitization projects, noting that some institutions grant digitization projects to a specialized external client.

In general, the digitization project includes the following:

- **Project Manager:** For the success of the digitization project, workers with the ability to analyze and project management skills are required to follow up on existing workplans and add new works to ensure the benefit of the digitization project.

- **Technical expert:** The digitization project includes the integration of computer hardware and digital imaging equipment, software packages used in imaging, and we need skilled technical experts to follow up and examine multiple hardware and software options to achieve the digitization project's objectives in the light of the available budget and high efficiency.

- **Archival and catalogue:** they follow the procedures for classifying, cataloguing, retrieving and archiving

archival documents, and experience in the management and documentation of digital documents must be assisted by the organization's information and technology management.

- **Computer and hardware operator:** There must be workers who enter the data to be digitized and digitized on the scanners, and must have a clear understanding of the workflow plan in order for the digitization process to proceed regularly and in accordance with quality standards.

2. Financial requirements.
Financial resources are critical points from the age of any project, especially digital transfer projects, and are determined by the prices of physical equipment (Azevedo and Almeida, 2021) [5]. (such as workstations, scanners of various kinds and categories, servers for storage and storage, "ROM/CD" copier, "DVD" transcript, etc.) with different software, multimedia material production applications (Voice, image, motion pictures), add the cost of training media, technical and engineering personnel on this project, and the project's financial needs can be assessed given the quality of the planned objectives to be reached and achieved.

3. Physical and software requirements:
a. Physical requirements: To complete the digitization process, devices that enable the conversion of analogue audiovisual data into digital data must be available and stored on the server or on storage receptacles (Vrana and Singh, 2021a) [32]. The material requirements are generally:

- **Means of Information Entry:** Devices and units with which information is entered into automated media, namely:

- **Scanners:** Scanners convert optical information into digital information, processable by the computer and stored in its memory, translating reflected light 1 into white and black points representing the binary system.

- **Digital Camera:** It captures images whether stationary or mobile and is transferred to the automated media device. It also has the ability to record digital video as files on its storage media. The information stored inside the digital video file when it is transferred from the camera to automated computers for the purpose of montage.

- **Automated computers:** Automated computers are an integral part of the digitization process. They are used for input processes, management and storage of audio, video and backups. They are also used to adjust scanner settings and control the quality of digital materials. They also enter the data description of scanned data.

- **Graveur:** to retrieve and record digitized data on recordable receptacles.

Storage receptacles and devices: Conservation is one of the most important elements of the digitization process (Hardisty *et al*., 2020) [19]. Therefore, storage receptacles with high storage capacity and quality must be selected to deal with automated media, the most important of which are:

- **Magnetic receptacles connected to automated information:** mainly hard disk, which is an essential piece of the computer's central unit, where data and computer operating software are kept.

- **Optical receptacles:** optical receptacles based on laser technology for recording and retrieving data, are the latest storage media used in the computer world that use light as their technological basis, most notably: (DVD), (HD-DVD) and (Blu-ray).

- **Servers:** Also called "storage servers", the server is a computer and storage device dedicated to file storage, and any network user can store their files on this server. Audio and video files are stored to place the digitization database, if the material is broadcast on the network, with backups on magnetic tapes motivated by only one-time backup of the server's device.

Means of broadcasting: equipment that allows the beneficiary to obtain a document or copy of the required information, and this is done by:

- **Display Screen:** It is a means of transmitting information about the document. The screen must be of a large size with high quality measurements and high color identification, helping to edit the visual and audio clips, while ensuring user comfort.
- **Headphones:** To bring out the acoustic material and hear it.

b. Software Requirements: Audiovisual documentation digitization needs some important high-efficiency software to be available and used for digitization. The most important of these software are (Palčák *et al*., 2022) [42]:

- **Image processing software:** It carries out the task of processing images such as making certain effects or modifications to old images of videos and movies, such as redistribution of lighting, color filtration, optical density and other processes that require improved image quality and clarity.

- **Audio and Video Processing Software:** Audio file modification and processing software such as special effects mode, audio synthesis work or deletion and blending sounds with each other, as well as processing and editing videos, combining each other, deleting other clips and adding certain effects.

- **Detection software:** aims to analyze the document for the purpose of retrieving it using keywords.

- **Search and retrieval software:** Its primary objective is to enable the user to access the document or information regardless of its awareness.

4. Legal Requirements
Digital media as one of globalization's most prominent features has also posed the problem of the illegal use of digital technologies in piracy and unauthorized cloning of audio-visual materials. by reprofiling and replicating the original materials at high quality and at limited cost, as well as electronic posting and sharing of audio and video files with others on the Web s intellectual property rights ", as well as the possibility of storing them on small-scale media

and distributing them to broad sectors of consumer audiences, without taking into account the intellectual property rights of the material.

The issue of intellectual property in the digital world needs some caution and caution, because many of its digital projects have only been interrupted by the issue of "intellectual property rights" because of the importance of this issue in driving production, publishing and authorship. Keeping rights for their owners ensures that creativity is open as long as rights are received by their owners.

Conclusion

The study found several key findings highlighting the importance of audiovisual documentation and how it is maintained. Here's a look at these results

- The nature of audiovisual documents has been clarified and their importance highlighted as a vital element that is an integral part of society's history and culture.
- A comprehensive view was provided on the functions and roles of audiovisual archiving centres, and how to effectively meet conservation and access needs.
- The methods and procedures used to maintain and protect archival audiovisual receptacles have been explained, contributing to the preservation of their quality.
- Effective methods have been defined to preserve audiovisual documents and ensure their long-term sustainability.
- Basic requirements and effective procedures for the maintenance and preservation of audiovisual archival materials have been identified.
- Digitization technology was highlighted and how it was applied to audiovisual archival materials.
- The role of archive centers in the adoption and implementation of digitization techniques and procedures has been clarified.
- Digital restoration processes have been introduced and how to use specialized software in this context.
- Emphasis was placed on the challenges and problems associated with archive digitization processes, while emphasizing the importance of preserving audiovisual archival assets in all contexts.

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