

## Digitization: a sure remedy for preservation of library information materials in the information age

**Ezugwu, Cletus Obinna**

Nnamdi Azikiwe Library University of Nigeria Nsukka  
Cletus.ezugwu@unn.edu.ng

**Obasi, Judith Ada**

Nnamdi Azikiwe Library, University of Nigeria Nsukka  
judith.obasi@unn.edu.ng

**Ugwu, Eric Okwuchukwu**

Nnamdi Azikiwe Library, University of Nigeria Nsukka  
Eric.ugwu@unn.edu.ng

### ABSTRACT

*Digitization is the process of converting information or content from a physical or analog format into a digital format that can be processed, stored, and transmitted by computers and digital devices. The goal of digitization is to create a digital version of something that was originally non-digital, such as paper documents, photographs, sounds, or signals. This work uses literature-based evidence to reveal digitization as a panacea for safeguarding library materials for posterity. The work covers the need for digitization of library materials methods of digitization. Digitization in the libraries, it discussed the importance of digitization, and stages of digitization, However, the journey of digitization comes with its own set of challenges, including issues of copyright, technological infrastructure, and the need for sustainable digitization strategies. This paper explores the multifaceted impact of library digitization, highlighting its benefits, challenges, and future prospects in the context of the digital age.*

**Keywords:** Digital digitization, Digitization and Library materials

### Introduction

Library is known for housing different forms of information resources both hard copy and soft copy for the purpose of proper dissemination of information to its client, thus digitization of information resources is very crucial to both library staff and users. In an increasingly digital world, libraries have embraced the challenge of transforming their traditional collections into accessible, digital formats. IFLA(2024)The digitization of library materials—ranging from manuscripts and books to photographs, maps, and audiovisual recordings—represents a pivotal evolution in the way knowledge is preserved and disseminated.

This process involves converting physical resources into digital assets through various techniques such as scanning, photographing, or encoding, depending on the material's type and condition.

The digitization of library materials serves multiple purposes, including the digitization of delicate and aging resources, enabling remote access to collections, and supporting broader educational and research endeavours (Chigbundu 2022). By transforming physical holdings into digital formats, libraries not only safeguard cultural and historical treasures against the ravages of time but also democratize access to information, breaking down geographical and socioeconomic barriers. The digitisation of library resources entails turning physical

books, documents, manuscripts, pictures, audio recordings, and other materials to digital formats. This transition enables libraries to provide access to their holdings outside of physical space and temporal constraints. Digitisation usually entails scanning or photographing the original materials, producing high-quality digital replicas, and collecting important metadata. These digital versions can subsequently be saved, organised, and accessed via internet platforms, digital libraries, or institutional repositories (Ashikuzzaman, 2021)

Abah and Terwase (2018) opined that digitization is a method of keeping cherished things thriving, undamaged or free from deterioration. According to Reitz as was cited by Abah and Terwase (2018) it is a way of extending the life of both library and archival materials by sustaining them in a digital condition suitable for use, This process aligns with the broader global trends of open access and digital equity, ensuring that knowledge remains a cornerstone of innovation and societal progress.

### **The need for digitization**

Digitization of Library information materials is a very pertinent aspect of librarianship especially in an attempt to avert the appalling effects of deterioration, Obasi,(2022) is of the opinion that there is need to move from our traditional ways of preserving library information materials to digital method which is known as digitization, Due to information explosion, librarians are faced with challenges of storage, space and the organization of bulk information which has also turned out to be cumbersome. As a result of that, digitization has now been introduced by librarians in most of the tertiary institutions in order to help preserve library information materials. The world has gone digital and digitization has now become the best way of preserving information, some information is born digital while some are being converted.

It is also necessary for national chorological importance, promotion of

traditional knowledge, Provision of favorable study environment for students, helping scholars to have access to irreplaceable information materials, to avert irreparable damage of library materials, to ensure that library information materials are relevance in the technological era, to avoid natural disaster, to maintain restriction and avoid over stepping of boundary by researchers (help to observe copy right law), for the purpose of teaching and learning . For availability and accessibility; In a bid to sustain, in order to make information materials available for users at all times, and for sustainability of human knowledge, digitization plays an important role. The needs for the digitization of library materials are therefore very paramount as will be discussed under the following subheadings

- For helping scholars to have access to irreplaceable information materials: It is the duty of librarians to ensure that information materials are preserved in such a way that they will be accessible by researchers. Amankwah , Bilson and Atisoe (2022) stated in their work that when preserving any documented information material that the aim should be to make it accessible to researcher any time and this should be achieved by proper care of the physical object.
- To provide favorable study environment for students: There is need for environmental friendly for both information materials and the users of information materials Akussah, as was cited by Amankwah , Bilson and Atisoe (2022)In the same vein Ashikuzzaman, ( 2021) affirms that environmental issues must be given a proper consideration in order to avoid loss of valuable collections to natural disasters such as fire, deluges, whirlwind etc. Due to changes in surroundings of library buildings there is need to preserve our

- information resources (Schrodt, Bailey, Kissling, and Field 2019).
- For importance of recorded national invents: Digitization of traditional records should be taken seriously for the sake of unborn generation so that there will be proper hand over of historical events without any alteration Ashikuzzaman,( 2021), Mani.(2017) affirms that for posterity sake information resources should be given proper care off. In the same vein Palmer ( nd )added that good care of library materials helps to prevent their damage and chronicles the previous, connects the current, and helps form the upcoming generations.
  - To promote traditional knowledge: Loach and Rowley (2021) found out that proper maintenance of traditional knowledge inherited from forefathers is a way of ensuring sustainability of such inheritance. Ashikuzzaman,( 2021) supported this opinion by saying that libraries being storehouse of information and ideas accumulated over the years should preserve such knowledge to enable students to build on those already existing knowledge. UNESCO (2022) maintained that one of the roles of education is to ensure that indigenous knowledge is being sustained through communication from one generation to another.
  - To avert irreparable damage of library materials: It is importance to prevent damage of library materials knowing that some contains ancient national legacies and such loss will be irreparable. Ashikuzzaman,( 2021) & Mani.(2017)stated that the adequate digitization of information material is of great important knowing that every aspect of human endeavor possesses dynamic information. Some materials resources are very fragile in nature and as a result should be carefully

taken care of. In the words of Palmer ( nd) Safeguarding library materials encourages their usage and to remain in circulation for as long as they are desired thus prolonging their existence .

- To maintain restriction and avoid over stepping of boundaries by researchers (help to observe copy right law): According to Bhandari (2023), research ethics should be fully observed so as to retain methodical reliability, boost the soundness of research and helps to place a check on scholars in order to avoid plagiarism In the word of Ashikuzzaman,( 2021) digitization of information resources has a way of maintaining copy right law and constraining users.
- To ensure that library information materials are relevance in the technological era: Proper digitization of Information materials helps to make them available and useful in computer age, and it is a well-preserved material that can be converted into electronic format (Eniekebi, R.E. 2020).

### Methods of Digitization

There are different methods of digitization which vary depending on the type of content or material being digitized. The different types of materials digitized involve; documents, images, audio, video, or physical objects. Below is a categorized list of common methods of digitization:

1. Digitizing Text Documents; This method of digitization is the conversion of document into digital format, this type makes use of; Scanning: Using flatbed or document scanners to create digital images (PDF, JPEG, or TIFF) of paper documents. Scanning. Using a scanner to capture an image, which can be an image of text, and convert it to an image file, such as a bitmap.(Yasar and Hanna 2023) it

- also covers the use of OCR (Optical Character Recognition): Converts scanned images of text into editable and searchable digital text formats. Photography: Capturing high-resolution images of fragile or large-format documents that cannot be scanned. Manual Data Entry: Inputting handwritten or printed information directly into digital databases or spreadsheets. (Yasar and Hanna 2023)
2. Digitizing Images and Artwork; Another method of digitization by format is digitization of images. This involves the use of Flatbed Scanning: Ideal for photos, prints, and flat artworks; produces high-resolution digital images. Digital Photography: Used for large or three-dimensional artworks, often with specialized lighting setups to ensure accurate color reproduction. Slide and Negative Scanners: Specifically designed to digitize photographic negatives and slides. (Hanna 2022)
  3. Digitizing Audio; Audio materials can also be digitized using another method of digitization, this involves; Analog-to-Digital Conversion (ADC): Converts analog signals from cassettes, vinyl records, or tapes into digital formats (MP3, WAV, AAC). Devices like USB turntables or tape-to-digital converters can be used. Audio Recording: Recording sound directly using digital recording equipment or software. Signal Cleaning: Tools like noise reduction software can enhance the quality of the converted audio.
  4. Digitizing Video; Video materials also have another method of preservation which make use of; Video Capture Devices: Convert VHS tapes or analog video formats into digital files using video capture cards or USB capture devices. Frame-by-Frame Scanning: For high-quality film digitization (e.g., 35mm film), each frame is scanned individually. Software Encoding: Converts analog video signals into digital formats (e.g., MP4, AVI, or MKV) with software tools.
  5. Digitizing Physical Objects; this also another format that attracts another method of digitization which involve the use of; 3D Scanning: Captures the geometry of physical objects to create a 3D digital model, often used for artifacts or manufacturing. Photogrammetry: Uses photographs taken from multiple angles to reconstruct 3D models digitally. CT scans or MRI: Used in medical or scientific fields to create digital cross-sections or models of objects.
  6. Geographic and Spatial Data are also digitized in another method using GIS Mapping: Digitizing maps or geographic data using GPS, drones, or digitizing tablets. Aerial or Satellite Imaging: Collecting data for geographic digitization, often with high-resolution cameras.
  7. Finally, Historical Records and Archives, uses the methods of Microfilm Digitization: Scanning microfilm or microfiche records into digital archives. High-Resolution Archival Scanning: For fragile or historical documents, specialized scanners or cameras ensure detail and preservation.

### Digitization in the library

Digitization has come into existence for the purpose of solving numerous academic problems that existed before the advent of Information Technology. Digitization in the word of Ukpanah and Usoro (2015) is the method of transforming written information resources in the libraries to electronic format through scanning and electronic digitization for online access. They further explained that it is a new method of preserving library materials. in the words of Yasar and Hanna (2023)

The popularity of digitisation surged in the second half of the 20th century with the advent of PCs and the internet. In the 1950s, these technologies made it possible to transform a wide variety of information into digital formats, including text, images, audio, and video. As computers developed, different data formats were converted into computerfriendly marking the beginning of the digitisation process in the 1960s. The pulsecode modulation procedure, which produces a sequence of binary integers, marked the introduction of digital audio recording technology in the 1960s. Image digitisation became possible in the late 1960s with the development of the first digital computer-based picture scanner. During the 1970s, digital storage has become more widely available to the general public since the advent of computers and the internet.

Digitization according to Say as in Ukachi (2013) are conversion process through some electronic medium and are made available to wider range of viewers both on-site and off-sight via some electronic transferring machine. According to Agbale (2018) digitized information resources are information that are available in electronic form. This agree with Xie, and Matusiak (2016) that stated that digitized information resources are that information that were formally in printed form such as texts, pictures, maps, etc and presently are in digital form which can be processed by a computer system or electronic devices.

Digitization according to Obaseki (2014) are those processes that brought information that were traditionally in printed book, journal, and magazine format into electronic form and accessed electronically. They explained further that digitization also means information that existed in written custom of humankind, reserved in the libraries, museums, temples, monasteries, and personal collections, consists of diverse types of cultural resources carve or written with ink on palm leaf, yap, wooden tablets and traditional paper and were converted into electronic with the aim of preserving them

and accessing them globally. It could also be seen as media way of recording information which could be accessed electronically.

Digitization are those electronic forms of information accessed via the internet, CD, DVD and they can also be seen as sets of instructional materials such as audio and video cassettes, CD-ROM, television and radio broadcast as well as multimedia components examples computer and satellites Vellaichamy and Jeysankar (2015). This confirms what Ankra and Atuase (2018) explained, that digitization are those electronic resources that can be accessed, retrieved, stored/preserved and used through electronic means. Through the help of computer, information and communication technology (ICT) digitized information resources has been made obtainable and accessible online.

Digitization could also be seen as transformation of analogue information materials to electronic information resources form or conversion of documents which could be in written format or picture form into digital form (Okeke, Udem and Onwurah 2015). We can conclusively say that digitization is a way of packaging and marketing local information, personal document, artifacts and indigenous knowledge with the intention of exporting them to the global market through reformation into electronic form for a wider reach.

### **Importance of Digitization of Library Resources**

The relevance of digitizing information and library resources cannot be over-emphasized. In this era of advancement of technology, electronic format of dissemination of information has contributed immensely to the easiest, timely and fastest way of making information get to the door step of users. The benefits of digitization include;

- Easy accessibility – The digitization of library materials and information resources offers users the easiest

- ability to access materials anytime and anywhere especially if such user is connected to the internet. In this case, the obstacle of being limited to a physical building and particular hours of service is curtailed. It enables users in remote areas access library resources online without much pressure instead of traveling distances to locate materials in libraries.
- Preserving the documents: Digitization of library materials enhances digitization of library resources which are exposed to wear and tear as a result of constant usage. Examples of such materials are historical records, analogue maps, official gazettes published by governments, old manuscripts, undergraduate projects, thesis, photo images, analogue maps, newspapers, coins, art works among others. The life span of these materials is increased because the online access has provided an alternative source of usage of these materials.
  - Encouragement of resource sharing: Digitization of library resources provides the opportunity for the availability of information to all users instead of being restricted to a particular group of researchers. Several users can access the same material the same time without obstacle and without interference. (Udem:2015).
  - Security of library materials: Digitization minimizes or in essence brings to an end the incidence of robbery, damage or mutilation of library materials. The quality of digitized materials is superb such that digitized materials could comfortably replace the original copy without distorting it and can as well serve the same purpose as the original copy. The safety of digitized materials is surely guaranteed.
  - Time-saving: Consulting digitized materials saves the time of users because a great number of users will be able to view a single piece of information while having simultaneous contents. This time saving factor complies with the fourth law of library science which states “save the time of the reader” (Bhat & Vinuta:2022.).
- Stages in digitization of library resources**
- Cornell University Library (2000) provided six stages in digitizing library resources which will be discussed as follows:
- Registration of documents: The first step to take in digitization process is to register the materials using a filing system. It will enable the library to keep track of the materials, minimize duplication or losing the material.
  - Scanning documents: The documents must be cleaned from dust before scanning takes place. The pages must be thoroughly crosschecked to ensure that none is missing. The essence of scanning is to create a high-quality digital content that represents the original copy.
  - Optical Character Recognition (OCR): This is a software that converts a scanned image into a text file that a word processor can read. The software breaks the text blocks down into individual character and matches the image of each letter against the patterns it recognizes as “a”, “b” etc.
  - Proofreading: Corrections of the documents are carried in two main ways. The first method is done by comparing the scanned text on the screen with the hard copy and entering the corrections directly on the computer. The second method involves printing out the scanned text and comparing it with the original copy.

- **Reformatting:** The content produced by the Optical Character Recognition (OCR) comes out in a straight text, with no columns, headers nor footers. The implication is that the work must be formatted to make it readable.
- **Final Version:** Some information is added to the text in the document so that it can easily be identified. For instance, a book must bear the title, author or editor, publisher and year of publication. For chapters in the book, the title and chapter of the book must be included and even the original page numbers in the printed version of the book.

### Challenges of Digitization

There are various degrees of challenges encountered in the process of digitization of library resources. The following factors are discussed as follows:

**Legal/Copyrights Issues:** The legal aspect of digitization as a challenge is related with intellectual property rights. Intellectual property is the fifth challenge stated by the Library of Congress as one of the challenges facing the digitization of library materials. It stated that a key element for digital libraries is appropriate recognition and protection of legal rights such as copyright, publicity, privacy, matter of obscenity, defamation, intellectual property as well as legalistic but serious concerns associated with the ethics of sharing or providing access to fold or ethnographic materials. The act of republishing library materials requires the permission from the rightful owners of such works especially as the works will further be exposed to public domain. A conflict of interest is experienced between libraries and publishers. There is an increasing agitation among members of the library, research and academic communities that copyright changes could hinder libraries from providing open access to digitized materials.

**Funding:** Digitization of library resources is capital intensive. A library that

intends to embark on digitization of its library resources must procure hardware and software equipment and must keep funds available to meet with frequent hardware and software upgrades and increasing cost of subscriptions. Training of staff for the digitization project requires a lot of capital too.

**Techno fear:** A lot of librarians indulges in the fear or dislike of, or discomfort with advanced technologies like personal computers, scanners etc since its emergence. They feel so comfortable with the conventional method of librarianship thereby making them feel reluctant to adapt to new technological devises. The staff needs to be exposed to constant training and retraining so that they will be acquainted with the emerging technologies and ways of manipulating them for effective use. Digitization of materials will be adversely affected if the staff is not conversant with skills involved in scanning and conversion of documents and files to required format.

**Band Width:** Digitization of library resources requires the use of high band width for the transfer of multimedia resources to the cyberspace. The limitedness of Band width in most developing countries poses a serious challenge to digitization. The band width keeps depreciating on a daily basis and impact is felt especially when materials are uploaded to the web.

**Difficulty in digitizing some materials:** Scholarly materials and bio data supplied by staff normally comes in a CD-ROM drives. Some of these drives when submitted are faulty, cannot be read or opened in computer thereby affecting the digitization process. Such faulty materials are usually dumped and labeled “problem documents”.

**Techno phobia;** some librarians are afraid of venturing into digitization, maybe because of the fear of their failure or the failure of the technology

## Ways of curbing the problems of digitization

There are possible ways to the challenges of digitization, It is pertinent that library should have a digitization policy in order to avert the copyright challenges. As stated by Akporhonor & Adogbeji (2021). Managers of libraries must recognize those items in order to minimize resource waste. These consist of theses, dissertations, highly sought-after materials, etc.

- The library should allocate more money to buy technological equipment and provide answers for problems like copyright, funding, and epilepsy. Three primary constraints in Nigeria that impede the digitization of information resources include power supply.
- The library needs an internal power plant since it needs regular illumination.
- To make the most of the digital information resources available to them, library users should also be instructed on how to access and use them. vi. For the five university libraries that are the subject of this study, solutions to the three primary barriers to digitization—copyright, money, and epileptic power supply—should be suggested in order to expedite the digitization of information resources in libraries.
- Training and retraining of staff on the processes of digitization is also tantamount to curbing the challenges of digitization in Libraries

## Conclusion

Digital digitization is considered as the only way out for safeguarding library information materials The article discusses the need for library material digitization and various digitization techniques, including classic and current approaches. The article then focused on digitization as the primary technique for preserving digital content in

libraries, going over its significance, phases, difficulties, and potential solutions. the difficulties associated with digitalization were also discussed, which includes; fund low and epileptic power supply among others. Suggestions were made on some possible ways that may help in combating the menace and thus the conclusion.

## References

- Abdulsalami, T. L., Nwachukwu, V.N. & Salami, P. S. (2016). Digitization and Digitization as means of accessing information in Nigerian University Libraries: A case study of Bayero University, Kano and Kashmir Ibrahim Library, Ahmadu Bello University, Zaria. *International Journal of Education and Practice*.3(12).
- Adogbeji, B. O. & Akporhonor, B. A. (2021). Reasons for Digitization and it's challenges in Nigerian University Libraries. *Journal of Applied Information Science and Technology*. 14(2).
- Agbale, P. (2018). Awareness and use of Electronic Resources by Law students in Some Selected Universities in Edo State Nigeria. *Ambrose Alli University Ekpoma, Nigeria*, 20(1&2), 168-176.
- Angadi, S. S. (2021). Digitization of Library: A brief Introduction. *International Research Journal of education and Technology*.1(5).
- Akin, F .Eno, J.O. and Ubong, J.O.(2017) Digitization of library Resources in Nigeria Universities: a Study of Collections in Cross River State Universities. <https://www.researchgate.net/publication/352330095>. Retrieved on 16/3/12



- Amankwah, D.N., Kojo, Paa Kojo Ebi, B.A. and Atiso, G. (2022) Digitization of Library materials: A Case of Public Library Within the Accra Metropolitan Area of Ghana. <https://digitalcommons.unl.edu/libphilprac/6927>. (e-journal) Libraries at University of Nebraska-Lincoln. Retrieved 6/3/2024.
- Ashikuzzaman, M.D. (2016). Digitization of Library Resources: Benefits and Challenges. Library and Information Science Network. Retrieved from: <https://www.lisedunetwork.com>
- Bhandari, P. (2023) Ethical considerations in Research | Types & Examples. <https://www.scribber.com/methodology/research-ethics>. Retrieved 12/3/2024
- Bhat N & Vinuta J. S (2022). The significance of Digital Library Resources. International Journal of Multidisciplinary Research (IJFMR) 2(3)
- Chigbundu, M.C. (2022) The Role of Library Digitization in Access and Preservation of Library Resources, Global Perspectives on Sustainable Library Practices (pp.114-129) DOI:10.4018/978-1-6684-5964-5.ch008
- Cornwell University Library/Research Departments (2000). Moving Theory into Practice: Digital image for libraries and archives. Research Libraries Group. Retrieved from <http://www.library.cornell.edu/digitization/tutorial>
- Eniekebi, R.E. (2020) Digitization and Conservation of Library Materials in the Digital Age: Challenges for Libraries in Nigeria. Library Philosophy and Practice (e-journal). 5090. <https://digitalcommons.unl.edu/libphilprac/5090>. Retrieved on 11/5/2024,
- Fabunmi B. A., Paris M. & Fabunmi M. (2006). Digitization of Library Resources: Challenges and Implication for Policy and Planning. International Journal of Africa and America Studies. 5(2).
- Hanna, K. T (2022) digitisation, <https://www.techtarget.com/whatis/definition/scanner>
- Hendrikus, F.J. (2019) Management and Process digitization of Library materials. [https://www.academia.edu/41517495/Management\\_and\\_Process\\_Digitization\\_of\\_Library\\_Materials\\_Regional\\_Library\\_and\\_Archive\\_Office\\_of\\_Yogyakarta\\_Special\\_Region](https://www.academia.edu/41517495/Management_and_Process_Digitization_of_Library_Materials_Regional_Library_and_Archive_Office_of_Yogyakarta_Special_Region).
- Kannappanavar, B.U., Rajanikanta, S.T. & Tandur, S. K. (2010). Importance of Digitization of Library Materials. SRELS Journal of Information Management. 47(1).
- Loach, K. and Rowley, J. (2021) Cultural Sustainability: A Perspective from Independent Libraries in the United Kingdom and the United States. Published in Journal of Library and... Environmental Science, Sociology. Retrieved 13/4/2024.
- Mani, B. R. (2017) Digitization and Conservation of Library Materials in the Digital Age. International Journal for Multidisciplinary Research. Retrieved on 6/3/2024
- Schrodt, F., Bailey, J.J., Kissling, W.D. and Field, R. (2019) To advance sustainable stewardship, we must document not only biodiversity but geodiversity <https://doi.org/10.1073/pnas.1911799116> Retrieved 14/2/2024

- Obaseki, T.I.(2014) Availability and use of electronic information resources and service delivery in university libraries in South-South Nigeria. unpublished PhD thesis. University of Nigeria Nsukka.
- Obasi,,J.A.(2022) Access and Use of Digital Information resources For Enhanced Academic work Among Postgraduate students In Federal University Libraries South- East Nigeria. Unpublished. Thesis
- Okeke, I.E.,Udem, K.O. & Onwurah, B. (2015). Digitization of Library Resources in University Libraries: A Practical Approach. Challenges and Prospects. Majorlis, Madonna journal of research in Library & Information Science, 3(2), 35-57.
- Orim, F.S. and Afebende, G.B.(2018) Records Management At The Registry Of Four Selected Universities In South-South Region Of Nigeria. Lagos Journal of Library & Information Science. Vol (7)1/2, 69-81
- Palmer, L.(nd) Digitization Librarian, Fenwick Library, George Mason University, Fairfax, VA 22030; contact 703-993-2667
- Udem, O.K., Okeke, I.E. & Onwura, B. (2015). Digitization of Library Resources in University Libraries: A practical Approach, Challenges and Prospects. Madonna University Journal of Research in Library and Information Science. 3(2).
- Ukachi, N.B. (2013).Accessibility and students variables as correlates of the use o in electronic information resources in university libraries South-East Nigeria. unpublished PhD thesis, university of Nigeria Nsukka
- Ukpanah,M.E. and Usoro,I. (2015). Management of Digitization of Theses and Dissertation in Federal University Libraries in Nigeria. Journal Library and Information Sciences Digest, 8(1), 8-14.
- UNESCO (2022) Education and awareness. Retrieved 23/3/2024
- UNESCO, IFLA & ICA. (2002). Guidelines for digitization projects. Retrieved from <http://porta.unesco.org>
- Vellaichamy, A. and Jeyshankar, R. (2015). Information Access Patterns in the Digital Age: A Users' Study of Alagappa University, Tamilnadu, International journal of Next Generation Library and Technologies,1(3), 1-7. [www.ijnlgt.com](http://www.ijnlgt.com). Retrieve on 14th September, 2020.
- Xie, I and Matusiak (2016). Digitization of text and still images. Digital Library Resources an overview| Science Direct Topics Discover Digital Libraries[https://www.sciencedirect.com.> topics >computer-science](https://www.sciencedirect.com/topics/computer-science) Retrieved on 30th April 2021
- Yasar, K and Hanna K. T. (2023) Definition of TechTarget and Informa Tech's Digital Businesses Combine. <https://www.techtargt.com/whatis/definition/digitization>