Challenges in Digital Preservation in Developing Countries

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Abstract:

Today is the age of digitalization. Most of the physical products convert into digital products. Books, Magazines, Newspapers, Periodicals, Journals, Newsletters and references are not different from it. Digital preservation refers to the process of maintaining and ensuring constant access to digital information over the long period of time. Digital technology offers many advantages over print technology. Information technology, as well as other related technologies such as the Internet and the Web based system, is always changing rapidly day to day. It is difficult for libraries and information resource centres to adapt to the rapidly changing technology in digital preservation. Developing countries face the various challenges in the era of digital preservation such as Human resource issues, Technological issues, Legal issues, and Economical issues etc.

(Key Words – Digital, Preservation, challenges, Human Resource issues, Technology issues, Legal issues, Economical Issues)

1. Introduction:

Today is the age of digitalization. Most of the physical products convert into digital product. Books, Magazines, Newspapers, Periodicals, Journal. Newsletters and references are not different from it. Most of the digital platforms are available as a alternatives to library such as Shodh ganga, Shodh Sindhu , Digital libraries. N-List, etc. As per the research Digital users are tremendously increased day by day. Now, Digital preservation process are plays the most important role in archiving digital libraries. The purpose of digital preservation are maintaining and ensuring continued access to digital information over the long period of time. The developing countries like India face the numerous problems or issues in digital preservation such as Technological legal issues, Organisational issues and legal issues. Mine research paper focuses on challenges of Digital preservation in Developing countries.

2. What is Digitalization of library & Digital Preservation?

- Digitization is the process of converting information (Books, Magazine, and References etc.) into a digital format, while digitalization refers to the broader transformation of library processes and activities to take advantage of digital technologies and data.

- Digital preservation refers to the process of maintaining and ensuring constant access to digital information over the long period of time. It includes strategies and actions to manage digital materials

such as e-book, e-journals, e-magazine etc., including born-digital and digitized content, to protect them from technological obsolescence, media failure, and other risks.

3. Why Digital Preservation is necessary?

- Digital Preservation is necessary to safeguard information of enduring value for current and future generation.

- Digital Preservation is necessary because of protecting against media and technology undesirability.

- It is supported to research, culture and commerce.

- It is supported to safeguard the rare books which are converted in digital form.

- It is helpful to build a digital memory for future references and use.

- It is helpful to create strong data base centre of Information.

- It is protected from natural disasters.

4. What is the nature of Digital Preservation?

- Digital preservation helps to provide long-term access to end users. When physical library convert into Digital library and used preservation technique of it. It is also available long time period to the readers.

- Digital preservation always manage the rapid changes in technology such as hardware and software to safeguard data from becoming unapproachable due to out-dated technology.

- Digital preservation helps to preserve and maintain original content and context of digital materials due to other media and ensuring they have not been altered or corrupted over time.

- In the various unwanted circumstances, Digital preservation is protecting digital assets such as media failure, out-dated technology, physical loss and other potential fears.

- Digital preservation process is a cost-effectiveness process. It is sustainable and affordable for long time preservation of information.

5. Review of literature:

a) Kyong-Ho Lee, Oliver Slattery, Richang Lu and McCrary (2002), they are studied on the state of the Art and practice in digital preservation. They focused on tools and techniques of digital preservation. They interpreted various issues related to adaptation of Digital preservation. Especially, technological issues are major challenges to digital preservation and its management. They suggested various models which is help to digital preservation technique.

b) Kenneth Thibodedu (2002), he conducted the study on overview of technological approaches to digital preservation and challenges in coming years. He stated that, technology up gradation is the one of the most important challenges in digital preservation.

c) Marnyn Deegan and simon Tanner(2006), they wrote the article on issues in digital preservation. In this article, they interpreted that, the challenges of our digital future is not perpetuate a scenario of data and poor records that have dogged out progress over the last 25 years. They focused on some issues i.e. Authenticity of digital data, surrogate versus original, disposal of originals and their replacement by surrogates etc.

d) Usman ali shah (2021), he conducted a study on Problems and challenges in the preservation of digital contents; an analytical study. He interpreted the some problems and challenges of digital preservation. He focused on nature of digital contents, fragility of the media, machine dependency; maintain digital objects, lack of experts, improper budget and copyright and intellectual property rights are the main challenges in the digital preservation.

6. **Issues and challenges of Digital Preservation:**

Digital technology offers many advantages over print technology. Information technology, as well as other related technologies such as the Internet and the Web based system, is always changing rapidly day to day. It is difficult for libraries and information resource centres to adapt to the rapidly changing technology in digital preservation. Initially, the risk factors associated with digital preservation should be thoroughly examined and their potential impact assessed. Different scholars have identified various problems and challenges regarding the preservation of digital materials. Mine research focusses on the challenges of Digital preservation in developing countries like India. They can be categorized as follows.

a) Human Resource Issues
   1. Lack of Professional Skills
   2. Lack of Training
   3. Human Errors
   4. Lack of Management
   5. Lack of Awareness
   6. Lack of Education
b) Technological issues
   1. Storage Media:
   2. Changes in Technology
   3. Media failure
   4. File format & Style

5.   Authenticity and Reliability

c) Legal issues

    1.   Intellectual Property Right (IPR)

    2.   Controlling Access and Safety

    3.   Licensing

d) Economic issues

    1.   Inappropriate Budget

    2.   Large Investment

    3.   Maintenance & Management cost

a)   Human Resource: In a country like India, acquiring the right human resources for digital preservation is a multifaceted challenge that requires a strategic approach to recruitment, training, and institutional support. The key problem lies in the unique mix of skills required, which are often in high demand and in short supply.

1. Lack of Professional Skills: Digital preservation is a multi-faceted field. Human resources for digital preservation need to be skilled. In a country like India, it is very difficult to find skilled manpower.

2. Lack of training and professional development: The digital landscape is constantly changing, so continuous education and proper training is a necessity. Developed countries lack proper training centers.

3. Human Errors: Humans are not machines; they do not work like machines. Therefore, human errors can become challenges for digital protection.

4. Lack of management: Digital preservation is a long-term and ongoing process. Professionals need to be able to develop preservation strategies, implement them, manage projects, and create institutional policies. These are things that are not seen in developing countries.

5. Lack of Awareness: Digital preservation is a niche field. Awareness about digital preservation is not seen in underdeveloped countries, even among people with skills related to digital preservation.

6. Lack of Education: A key part of the preservation process is to educate creators of digital content about best practices from the start. This requires active and on-going efforts. But there is a lack of education in developing countries.

b)   Technical issues: Digital security is facing a number of ever-evolving technological challenges day by day. They can be summarized as follows:

    1. Storage Media: The storage media used to store digital data in developing countries presents a number of challenges in digital preservation, which are distinct from data storage. These technical issues can be physical degradation i.e. Digital storage media are often fragile and have a limited lifespan. This is a critical issue for digital preservation that requires a proactive approach to prevent data loss. Technological obsolescence i.e. this is a major component of the "digital dark age". Digital preservation is so complex that, even if the data on a medium is completely intact, it

is useless if there is no way to read it. Digital preservation faces many technical challenges, such as changes in hardware and software.

2. Changes in technology: Nowadays technology is changing rapidly. Yesterday's technology is becoming old today. It is very difficult to maintain the latest technology like in developing countries.

3. Media Failure: All physical media have a limited lifespan. Magnetic tapes, CDs, DVDs, or other storage devices can fail for some reason. Recovering such media is very difficult.

4. File Formats: Digital content is no longer just simple text files. It includes complex databases, interactive websites, virtual reality environments, and social media data, presenting many unique preservation challenges.

5. Authenticity and Reliability: In digital preservation, authenticity refers to the claim that a digital object is real. The object is a faithful, unaltered record of its original state at the time of its creation, and its history (origin) is accurately documented, but verifying its authenticity is a major challenge. Because, like any physical document, a digital file can be completely copied and altered without any visible trace.

c) Legal Issues: In digital preservation, legal compliance is a primary and often complex challenge. Many countries have different laws, e.g. copyright laws. This creates a challenging landscape of legal uncertainty for conservationists.

1. Copyright and Intellectual Property Rights: Copyright and Intellectual Property Rights is the most important legal hurdle. Although most of the core activities of digital preservation, which are necessary to combat technological obsolescence, are considered to be violations of copyright law, they continue to be violated.

Digital preservation is essentially about making copies. This leads to multiple copies being made and misused. Each of these actions can be seen as a violation of the copyright holder's exclusive right to reproduce their work.

In the physical world, the "first sale" principle allows you to sell, lend, or give away a book you have purchased. But in the digital realm, this principle is not clearly defined. When you "buy" a digital file, you are granting permission to use it, not to own it. But it is being abused.

2. Controlling access and security: Controlling access and security" is a key and multifaceted challenge in digital protection. Ensuring the long-term security and integrity of digital assets while providing users with appropriate and timely access is becoming a challenge. In today's dark networking, anyone can easily access and pose a threat to the digital world. Therefore, controlling access and security can be said to be a key challenge in digital protection in today's era.

3. Licencing: Licensing is a major and often underestimated challenge in digital preservation. It is a complex legal issue. Typically, ownership of a physical object is acquired when a library or collection purchases a book under the "first sale" doctrine. This gives the organization the right to lend, repair, and preserve the book. But in the digital world, purchasing a digital book does not give you ownership. It is only permitted to use it under the terms of use.

d) Economic issues: The financial issue is the most significant and enduring challenge for digital preservation. While the cost of digital storage media is decreasing, the overall cost of a sustainable digital preservation program remains affordable. The cost of digital preservation is often underestimated or misunderstood, leading to a lack of institutional support and an inability to build long-term, robust preservation infrastructure.

7. Conclusion:

Today is the age of digitalization. Most of the physical products convert into digital product. Books, Magazines, Newspapers, Periodicals, Journal. Newsletters and references are not excluding from it. Digital preservation refers to the process of maintaining and ensuring constant access to digital information over the long period of time. Digital technology offers many advantages over print technology. Information technology, as well as other related technologies such as the Internet and the Web based system, is always changing rapidly day to day. It is difficult for libraries and information resource centres to adapt to the rapidly changing technology in digital preservation. Developing countries face the various challenges in the era of digital preservation such as Human resource issues, Technological issues, Legal issues, and Economical issues etc.

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