

Digital Divide and Libraries in India

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Abstract

In developing country like, India advance in ICTs have brought a lot of opportunities as well as lot of challenges also. Recent developments in Information and Communication Technologies (ICTs) have, while making our life easier, created a social divide that is known as the digital divide. Research and development in digital libraries do not only require sophisticated ICTs, but they also call for huge investment in terms of money and intellectual resources. The digital divide is a phenomenal term that describes the widening gaps among human- beings in possession of Information and accessibility to ICTs in information age.

Keywords: Digital Libraries, Digital Divide, Digital India.

1. Introduction

Information Technology (IT) is a most weighty technology in human history, having great influences on swoony and thence on people's lives from carver to charmer of the world. It is also well debated truth that the use of digital technologies has divided information poor, making a vertical Separation on equality in access to ICTs that led to a massive divide digitally.

While the information and communication technologies (ICTs) in general, and the Internet and the world wide web (www) in particular, have made life easier by facilitating easy communication with virtually everyone, and easy access to information located virtually and – where in the world, they have also widened the gap between the rich and the poor, they have' and they have not's. In other words, new technologies, while improving our life in many ways have created what is called the “digital divide.”

However many policy makers debate on the outcome of two vary basic forms of digital divide at individual level,

- ❖ Firstly, those who have on access to the ICTs, and
- ❖ Secondly those, who have access but no ability to use the technology.

2. History of Digital Library

Digital Libraries are the outcome to information explosion Devolved Countries recognized the use of digital libraries quite early. In 1970s Libraries in devolved wintriest began to connect remote host to conduct online. The invention of CD-Rom in 1980 was a turning point in the digitization of information 1990s marked a progressive more toward digitization due to networking, electronic document delivery services, electronic journal etc.

There are number of terms which are used by out bars to represent the concepts of digital libraries. There terms are “Library without walls” etc.

3. Basic needs for Digital Libraries

S. NO	Devices	Examples
1	Networks	LAN, MAN, WAN, Internet etc.
2	Printers	Laser Printer, Dot martyr, Barcode Printer digital graphic printer , etc
3	Computer	Server, P.C. with multimedia, U.P.S. etc.
4	Scanners	H.P. Scan jet, flatbed, Sheet feeder, Dream Scanner, slide Scanner, Microfilming, Scanner, Camera & Barcode scanner, etc
.5	Storage devices	Optical Storage device, CD-Rom Juke bore etc.
6	Software's	Any Suitable Software, which is interconnected and suitable for LAN
7	Audio Visual	Cower T.V. V.C.R. D.V.D. Sound bore, Telephone etc.

Table: 1: Basic needs for Digital Libraries

4. Resource of Digital Library

Are those, which the computer can store, organized transmit and display without intervening conversion process. It induces both print and electronic or digital material. The digital material may be of multimedia types or any another i.e. only digital audio, video, photograph, drawing digitized sound, e-book, v-book, electronic tar, map, image 3D representation etc. The collection may also include structured/unstructured tart, scanned images, graphic, video recording etc.

4.1 ON Line Resources

4.1.1. Local database of traditional books in machine readable form.

4.1.2. Well trained manpower for online help.

5. Recent Trends in Digital Library

The library in the traditional timing and today in the changing digital era was fully changed according to the need and requirement of the users.

1. **Architecture, systems, tools and technologies:** this category refers all technical, infrastructural and algorithmic and system related components of digital libraries.
2. **Metadata:** Digital collections require well – structured metadata schemes to describe digital objects and content at various levels of granularity.
3. **Digital Right management:** DRM Technology is a key enabler for the distribution of digital content and it is an integrated secure digital content distribution technology.
4. **Digital content and collections:** This category refers to individual digital objects and to collections of objects in repositories encompassing a variety of materials in different digital formats.
5. **Digital part folios:** The digital part folios are new tools for student assessment. Including this emphasis on the learning process and material result a student achieves throughout a course of study. E.g. : Amsterdam University of Professional Education.

6. Issues in Digital Preservation

1. **File formats and software:** - Determine the file format status of your digital holdings. In what versions are represented, in what quantities? Such an inventory is an important step towards managing file format risk. The range of format in use should be consolidated to minimize duplication and eliminate problem formats. This process is known as normalization.
2. **Hardware:** - New compacting hardware opens the door to new and improved software, leading to software and file format obsolescence. The new software will not run on old hardware, further exacerbating hardware obsolescence.
3. **Media format:** - There are three commonly used categories of digital storage media: disk, tape and solid state. The nature of the physical media in which digital data is stored presents a major challenge to the preservation of digital content. The great variety of media types, their often rapid obsolescence from technology change, and their vulnerability to physical degradation all contribute to problems.
4. **Physical Degradation:** - Digital information lasts forever or ever five years, whichever comes first, “Rothenberg quipped. That means any organization that wants to keep its data accessible will have to look forward to an unbroken chain of migrations with in a time scale short enough to prevent the media from becoming physically unreadable or obsolete before they are copied.

5. **Storage issues:** - Improper storage may be the most common reason for premature media failure. Moderation of temperature and humidity are well known to extend the usable life of most storage, but many another factors can help to.
6. **Handling issues:** - Another major threat to storage media from improper handling. Though many digital media give the impression of sturdiness and durability, they can be damaged by too casual an approach to use.

7. Advantages of the Digital Library

A digital library is not confined to a particular location or so called building it is virtually distributed all over the world. The user can get his her information on his own computer screen by using the Internet. In the new environment owing a document will not be problem for the library because the user will pay for its uses.

1. **No physical boundary:** - The user of a digital library need not go to the Library physically; people from all over the world could gain access to the same information as long as an Internet connection is available.
2. **Round the clock availability:** - Digital libraries can be accessed at any time, 24x7 and 365 days of the year.
3. **Multiple accesses:** - The same resources can be used at the same time by a humbler of users.
4. **Space:** - whereas traditional libraries are limited by storage space, digital libraries have the potential to store much more information, simply because digital information requires very little physical space to contain them. When the Library had no space for extension digitization is the only solution.
5. **Networking:** - A particular digital library can provide the link to any other resources of other digital library very easily these seamlessly integrated resource sharing can be achieved.
6. **Cost:** - The cost of maintaining a digital library is much lower than that of a traditional library. A traditional library must spend large sums of money paying for staff, book maintain, rent and additional books. Digital. Libraries do away with these fees.

8. Disadvantages of the Digital Library

The computer viruses, lack of standardization for digitized information, quick degrading properties of digitized material, different display standard of digital product and its associated problem, health hazard nature of the radiation from monitor etc. makes digital libraries at times handicap.

1. **Copyright:** - Digitization violates the copy right law as the thought content of one autbar can be freely transfer by other without his acknowledgement.

So one difficulty to overcome for digital libraries is the way to distribute information. How does a digital library distribute information at will protecting the copyright of the author?

2. **Speed of access:** - As more and more computer are connected to the Internet its speed of access reasonably decreasing. If new technology will not evolve to solve the problem. Then in near future Internet will be full of error message.
3. **Initial cost is high:** - The Infrastructural cost of digital library i.e. the cost of hardware, software, leasing communication credit is generally very high.
4. **Efficiency:** - with the much larger volume of digital information, finding the right material for a specific task becomes increasingly difficult.
5. **Preservation:** - Due to technological development a digital library can rapidly become out of date and its data may become inaccessible.

9. Automation of Libraries

Library automation is the use of computer to perform traditional library activities like acquisition, cataloguing and circulation. It may be distinguished from related fields Such as information retrieval, automated indexing and circulation and full-text processing such as digital library creation, digital publishing and the internet related service.

Library Automation is the need of time as the document and the information are growing dynamically. The use of the information is increasing dramatically by the user need in the modern age. The library automation not only to organization of the knowledge, but also it manages the Library routine work.

Commonly used Automation package in India:

- (1) Software developed by private companies.
- (2) Software developed by individuals.
- (3) Software developed by government agencies.

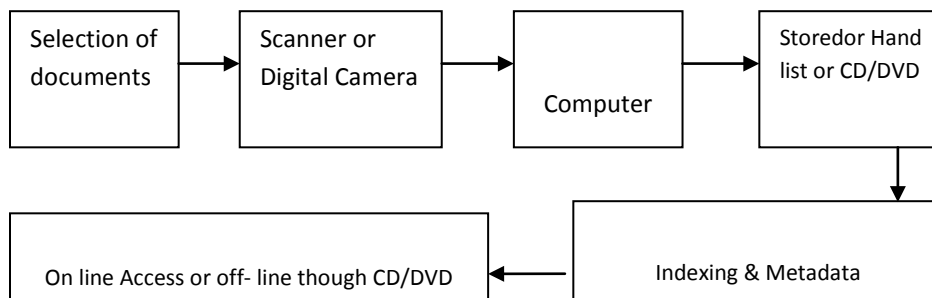


Fig-1: Digitalization Process

10. Few International Digital Library portals

A digital library stores magazines, newspapers, books, reference materials, and other library collections in a digital format. These libraries can be accessed from

anywhere in the world as long as you have a computer. Here are some of the world's best digital libraries.

1. **Universal Digital Library** - The million book collection.
2. **Project Gutenberg** - More than 20,000 ebooks, audio books, CDs and DVDs.
3. **Bartleby** - Huge collection of reference, verse, fiction and nonfiction books.
4. **Ibiblio** - Library and digital archive offering ebooks, academic papers, software, music, and streaming radio.
5. **Google Books** - More than 100,000 books and a fully searchable database.
6. **Live Search Books** - Thousands of books and a fully searchable database.
7. **World Digital Library** - Source for manuscripts, rare books, music, films, maps, prints and more in multilingual format.
8. **ERIC** - World's largest library of digital education literature.
9. **Bibliovault** - Digital files for more than 12,500 books.
10. **Internet Public Library** - Books, magazines, newspapers, reference materials and more.
11. **Online Books** - More than 30,000 books from the University of Pennsylvania.
12. **The Perseus Digital Library** - Tufts University collection of classics and humanities resources.
13. **Columbia University Libraries** Broad range of text, audio and images from Columbia University.
14. **Yale University Library** - Wide range of books, abstracts, films, images and more.

Continued.....

S. No	World Rank	Institution	Size	Visibility	Files Rich	scholar
1	308	National Institute of Technology Rourkela eThesis	813	407	568	261
2	334	Open Access Repository Publications of Fellows of the Indian Academy of Sciences	457	493	137	416
3	338	Indian Institute of Science Bangalore Institutional Repository	531	303	394	611
4	380	Central Marine Fisheries Research Institute Institutional Repository	619	496	293	419
5	384	Openmed National Informatics Centre India	1066	191	595	798
6	471	National Institute of Oceanography India Digital Repository	864	388	577	753
7	497	Thapar University Digital Repository	927	594	681	473
8	513	National Institute of Technology Rourkela Digital Archive	971	521	778	617
9	554	Information and Library Network Centre Institutional Repository	766	699	416	586
10	582	Dyuthi Digital Repository Cochin University of Science and Technology	175	739	622	725
11	593	National Aerospace Laboratories Institutional Repository	1259	705	524	575
12	596	International Crops Research Institute for the Semi-Arid Tropics Open Access Repository	1040	698	504	654
13	646	Indian Institute of Science Bangalore Electronic Theses and Dissertations	427	910	917	497
14	683	Open Access Repository National Metallurgical Laboratory	1274	894	515	541
15	702	Indian Institute of Management Kozhikode Institutional Repository	1360	329	1055	1126
16	726	Indian Institute of Technology Bombay Digital Repository	415	693	691	1025
17	743	Indian Statistical Institute Digital Library	641	267	1054	1282
18	820	Indian Institute of Astrophysics Institutional Repository	1247	743	561	1022
19	923	Raman Research Institute Digital Repository	573	767	649	1239
20	936	Bhagirathi IIT Roorkee Repository	1053	1092	982	840
21	958	Central Food Technological Research Institute Institutional Repository	703	1286	1120	551
22	983	North-Eastern Hill University Digital Library	409	1006	375	1221
23	1037	Knowledge Repository Open Network KNOOR University of Kashmir	748	1260	953	877
24	1055	National Science Digital Library Council of Scientific and Industrial Research	1135	430	969	1403
25	1082	Kautilya Digital Repository Indira Gandhi Institute of Development Research	1347	1047	1283	991
26	1248	Indian Institute of Technology Delhi Institutional Repository	831	807	599	1446
27	1265	Indian Agricultural Research Institute Institutional Repository	1539	1199	1199	1216
28	1395	Knowledge Repository of Indian Institute of Horticultural Research	1223	1556	1103	1003
29	1398	Knowledge Repository Central Institute of Medicinal & Aromatic Plants	1342	1408	845	1364
30	1401	Digital Repository of National Centre for Radio Astrophysics	1232	1343	1059	1388
31	1441	Vidyanidhi Digital Library University of Mysore	1638	475	1491	1446
32	1524	Digital Knowledge Repository of Central Drug Research Institute Lucknow	1593	1075	1416	1446
33	1551	Indian institute of Chemical Biology Open Archive	1126	1582	764	1314
34	1553	Mahatma Gandhi University Online Theses	1609	1121	1491	1446
35	1625	Yuj Research Gateway Cochin University of Science and Technology	865	1582	1491	1446

TABLE-2: Digital Repositories from India among 1638 Top Repositories (Ranking Web of World Repositories, 2013)

11. Year wise Development of IRs

	Year	No. of IRs
IRs	2003	1
IRs	2004	4
IRs	2005	10
IRs	2006	11
IRs	2007	8
IRs	2008	11
IRs	2009	12
IRs	2010	9
IRs	2011	10
IRs	2012	6

Table-3: Year wise Development of IRs

Table-3 & Figure-1-Year of establishment of Institutional Repository is shown in Table-2and Figure-1. This Table indicates that E print in Library & Information Science - (E-LIS) institutional repository is the oldest library which was established in 2003, while **Inter-University Centre for Astronomy and Astrophysics, Pune - Dspace@IUCAA**) institutional repository is the youngest one established in 2012.

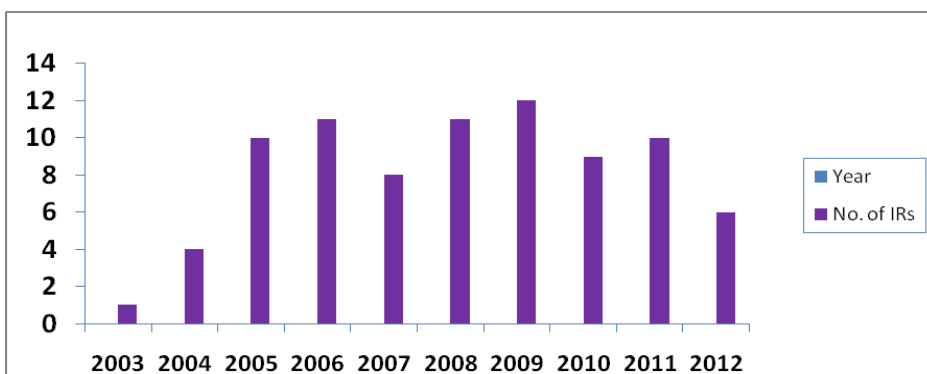


Figure-2: Year wise Development of IRs

12. Subject Wise Distribution of IRs

The table-5 & Figure-2 shows that the total collection and their percentage as different subjects such as social sciences, health & medical sciences, science and technology, multidisciplinary and library and information science. Here library

and information science has been treated as whole subject to see its total collection in IR in India.

Subject wise distribution	Collection	Percentage
Social Sciences	375125	18%
Library & Information Science	115159	5%
Health & Medical Sciences	224125	11%
Science and Technology	475158	23%
Multidisciplinary	875128	43%

Table-4: Subject Wise Distribution of IRs

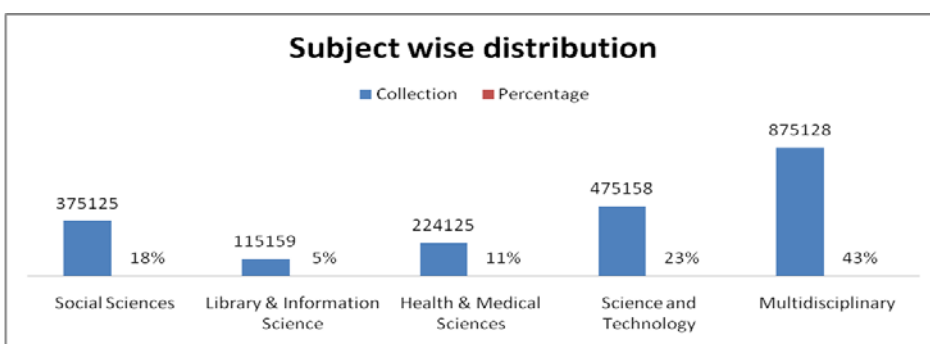


Figure-3: Subject Wise Distribution of IRs

13. Conclusion

India like other countries is affected by the digital divide. This is due to factor as discussed in this paper. However humbler of proposal to bridge this divide is ongoing. It is necessary to accept in mind that this effort of bridging the digital divide might take decade. Because India is alive with possibilities, this divide will someday be bridged. The government needs to triple its effort in providing support and resaves in order to bridge and digital livider. Libraries can make a huge impact the digital divide because they are institute of knowledge. They must provide access to information and communication technologies. By providing there service they will be opening the door to global knowledge.

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