Chapter 3  
Digital Resources: A Brief Study  

3.1 Digital Resources  
The types and forms of the resources of libraries have been transforming continuously. Developments of Information and Communication Technology (ICT) and Web technology have made a significant impact on electronic publishing. Because of fast development of ICT and its use in various fields, the facilities are extended enormously in storage, so also in access of information; implementation of network technology has made the process more intensive. Due to this change, collection of the Library and Information Centres (LICs) are now of diverse in nature consisting of both printed and non-printed resources.

Rusbridge (1998) divided the resources of a modern library into four types – legacy, transition, new and future. According to him, legacy resources are largely non-digital resources, including manuscripts, prints, slides, maps, audio and video recordings. Majority of existing legacy resources will remain outside the electronic domain for many years to come, despite the huge investment made in digitization process to convert these resources into digital form. Transition resources are those legacy resources which are being or have been digitized for increased access and to reduce reliance on physical libraries. New resources are either expressly created as digital or created in parallel with print form. He goes on describing the future resources as an entity of packaging the data resources and the access or processing method with machine independent code.

In the present study, electronic resource and digital resource are used as synonymous terms and our discussion is focused on transition and new resources only. Digital resources are those resources that are stored and accessible by computer. They are stored in the form of 0s and 1s. There is a wide range of resources which can be included in the category of digital resources, like electronic journals, electronic books, bibliographic databases, full text databases, image, maps, audio/video resources, statistical and numeric databases and
many more. Digital resources were earlier available in CD-ROM form which was mostly bibliographic and other databases; now they become available in CD-ROM, DVD-ROM and online accessible form is also available over the web.

Digital resources have many advantages over the printed form both for the users and the LIS (Library & Information Science) professionals. Selvi & Mohan (2001) in “Creation and management of digital resources and services at REC, Trichy library” described the advantages of digital resources. Again, Librarian Focus Group (2001) in “The Library, Electronic Resources and Scholarly Communication” discussed the benefits of using e-resources both for the users and the libraries. We can have the following advantages of digital resources –

i. Digital resources have the facilities like instant, multiple and remote access, quick downloading, effective searching, easy retrieval, and sharing by networks;

ii. Digital resources are available to anyone anywhere in the world at minimal cost and it does not get exhausted with unlimited use;

iii. Digital resources of large volumes can be stored in less space compared to printed resources;

iv. Remote access and transfer of digital resources is possible with speed and accuracy;

v. Digital resources reference can be used by reference librarians to look for information for users quickly; and thus the quality of information service can be improved and maintained.

3.2 Evolution of Digital Resources

The use of and discussion about digital resources have become popular in the last decade of the 20th century; although evolution of digital resources started in the early 1970s. A
number of libraries started the application of ICT for managing the bibliographic databases and these led to the creation of library automation software. OPAC (Online Public Access Catalogue) started replacing manual card catalogue and the Web-OPAC has made the libraries’ catalogue accessible even from outside the LICs in the web. The first form of electronic information tool was the online search service provided by vendors such as Dialog, SDC, and BRS which came to market in 1960s (Singh, 2004). During 1967, Legal Information Through Electronics (LITE) System was implemented by the US Air Force. Several software packages were released during the mid and late 1970s for computer-based storage, indexing and retrieval of documents in character coded form. Some of the better known text storage and retrieval packages are IBM’s Storage and Information Retrieval System (STAIRS), Battelle Automated Search Information System SEARCH, DOCU/MASTER, ASSASSIN, STATUS, CAIRS, etc. By late 1980s, text storage and retrieval programs were available from vendors for major computing environments including main-frame, microcomputers and LAN (Arora, 2001).

In 1971, Michael S. Hart working at the Material Research Laboratory of the University of Illinois, USA started the project Gutenberg. This is the first and largest collection of ebooks and as on 15th May 2012, it offers over 39,000 free ebooks <http://www.gutenberg.org/wiki/Gutenberg:About>. In 1990, Voyager introduced the first e-book format called Expanded format, meant to be read on personal computer. CD-ROM, a digital media with high storage capacity, longevity, and portability boosted the production of different CD-ROM products. “CD-ROM technology was introduced in mid-1980s and became increasingly popular in the 1990s” (Singh, 2004, p.57). Several full-text databases appeared in late 1980s and early 1990s, some of which are: ADONIS, IEEE/IEE Electronic Library (IEL), ABI/INFO, UMI’s International Business Database, UMI’s General Reference Periodicals, Espace World, US Patents, etc. Access to databases via dedicated international communication networks such as Tymnet was largely displaced by the development of the Internet in the 1990s. Like CD-ROMs or networked database on magnetic tape, databases delivered over the Internet were end-user friendly and efficient and did not cost the user anything. The Internet also had compelling new advantages,
including 24x7 availability, improved currency with more frequent updates, and remote access. There were also significant management advantages, including avoiding the high cost of LAN maintenance. Internet access became the access of choice for resources and libraries started migrating existing databases on CD-ROM to the Internet where price and funding permitted (Kichuk, 2010). During 1990s, the idea of e-journal started with the delivery of ASCII text sent via e-mail and gradually with the development of ICT and web technology e-journal has achieved the status of the most popular and mostly used digital resources all over the world.

The concept of Electronic Theses and Dissertations (ETDs) was first discussed in a meeting held in 1987 at Ann Arbor, Michigan organized by UMI and attended by representatives from Virginia Tech, the University of Michigan, and two small software companies – Toronto based SoftQuad and Michigan based ArborText. The result of several years of intense collaborative work, the ETD db software that emerged from Virginia Tech in 1996 provided a complete ETD submission package from beginning to end. Since 1996 the software has been freely available to institutions around the world. Networked Digital Library of Theses and Dissertations (NDLTD) which was earlier known as National Digital Library of Theses and Dissertations was the first repository of ETD established in the year 1996 <http://www.ndltd.org/about/history>.

Thus, we have numbers of digital resources like e-book, e-journal, e-database, e-zine, e-newspaper, ETD, e-reference source, audio and video recordings, etc. The modes of access of the digital resources have changed from offline form to online form, from standalone computer to networks; and day by day the types and formats of digital resources are changing and improving with the invention of new technologies.

### 3.3 Types of Digital Resources

Digital resources have slowly and steadily entered into the collection of library and information centre around the world. The users also prefer to use the digital resources due to the advantages like searching, browsing, multiple accesses, no time restriction etc. That
is why publishers also prefer to publish their publication in digital format first. Even some digital resources do not have printed counterpart also, which are popularly known as born-digital form of digital resources. Digital resources can be classified based on three parameters: creation process, granted access to users and content of the resources. These three types are discussed below.

3.3.1 Digital Resources Based on Creation Process

The creator of the digital resources may be a publisher or institution or individual. Based on the process of creation of these resources, digital resources can be divided into the following three categories.

a) Born-digital

The first kind of the digital resources is in the born-digital form of which there is no printed counterpart. Born-digital resources are items created and managed in digital form <http://www.oclc.org/research/activities/hiddencollections/borndigital.pdf>. Digital photographs captured by digital cameras are one of the fastest growing forms of born-digital resource. In addition to government and corporate documents, born-digital resources also include digital resources of institutional and organizational archives. These are documents in word processing formats or may include an array of e-mail, databases, spreadsheets, presentations, and other types of files. Static data sets created in the course of research are used as the basis for future research is also a form of born-digital resource. Another born-digital resource is dynamic data that includes data sets that are added to over time, time-based, or that include genetic sequencing or Computer Aided Design (CAD). Dynamic data can be seen in social environments like Twitter and Facebook etc. Digital media publications like commercial publications of music CDs, movies on DVD, and video games etc. are other forms of born-digital resources.

b) Hybrid

The hybrid resources are recognized as hybrid when they are available in both digital and printed forms either partly or fully. Different publishers have started producing their
publication in both printed and digital and LICs may opt to collect either one or both versions. It is observed that LICs are also becoming hybrid one in a phased manner as they are procuring both versions when they are available.

c) Converted
The third kind of the digital resources is those resources which are primarily in printed form and converted into digital form. They may be simply digitized images or images that are converted to full-text indexing resources by the application of OCR technology. The collection of an LIC may have in-house journals, annual reports, technical reports, or other datasets, that may have enormous importance for study and research. But accessibility of the resources will make obstacle due to limited access facility of these printed resources. Digitization is the solution to this problem, as it can facilitate multiple accesses to these resources.

3.3.2 Digital Resources Based on Granted Access
Digital resources can be classified according to the accessibility given to the users. It may be free or priced one from publisher or aggregators or from other sources. There are two types of digital resources based on access given to the users.

a) Open-Access resources
Suber (2009) in “Open access overview: Focusing on open access to peer-reviewed research articles and their preprints” defined OA resources as “Open-access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions”. Again in 2006, Tietenberg & Seo defined OA as “Open-Access (OA) resources are those that can be accessed by anyone at any time without restraint. Anyone can read, download, copy, print, distribute and use them for any lawful purpose, without financial, legal or technical barriers”.

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b) Subscription-based digital resources

The digital resources for which LICs have to pay the publishers or aggregators or other commercial vendors to have their access are subscribed digital resources. Most of the digital resources are available from commercial sources. These sources are publishers, scholarly societies, electronic journal sites etc. The subscription and access to these resources have become easier as the creation and the modes of access are developing with the advancement of technology. Many of the publishers now have their web-based interfaces to users where they can search and access the full text of the resources. To protect their investment, information providers are turning to licenses to define and control the use of their products. As a result, in addition to copyright, LICs must now manage the use of their information resources under the terms and conditions agreed to in a license (Brennan, Hersey, & Harper, 1997). And as a result license agreement has become essential for the subscription based digital resources.

3.3.3 Digital Resources Based on Content

We get various categories of digital resources when the thought content of the digital resources are classified. These can be divided into three major categories: text based, non-text based, and Meta resources. e-databases, e- conference proceedings, e- journal, e-newspaper, e-book, E-Thesis & Dissertations, e-encyclopedia, e-zine, e-reports, e-dictionary, e-directory, e-newsletter etc. can be included in text based digital resources.

In the non-text based category we can include animation, audio file, digital image, book illustrations, periodical illustrations, architectural drawings, maps, paintings, drawings, sketches, photographs, computer graphics, space photographs, video file, multimedia, etc. while in the third category abstracts, archival finding aid, bibliography, catalogue, index, etc. can be included. A discussion about some popular digital resources are given below

a) e-book

e-book is a term used to describe a text or monograph which is available in an electronic form. Popularity of e-book has been growing steadily over the years among the users including educators, businessmen, mobile users, libraries and children. In 1971, Michael S.
Hart started the project Gutenberg, the first e-book project. Borchers defined e-book as “An electronic book, or e-book, is a portable hardware and software system that can display large quantities of readable textual information to the user, and that lets the user navigate through this information” (Borchers, 1999, p.1). But more recently the term e-book is used specifically to describe a text which requires the use of e-book software or hardware to be read. Now, two types of e-books have appeared: first one that can be read online and the second one that require a portable hardware and software system to read it.

There are four types of e-books: downloadable, dedicated, web-accessible, and print-on-demand. Downloadable e-book requires no specific device to read. It can be simply downloaded and read from the web. Dedicated e-book can be read by a kind of reader exclusively designed for e-book reading. This type of reader has larger screen, more memory and are more spontaneous to use. Typically dedicated readers are light, allow the users to alter the font size, change the back-lighting, underline passages, perform keyword searches and make annotations. By the dedicated e-book reader e-books can be downloaded via a computer or through the reader itself. Users can access web-accessible e-book for a fee from the providers’ website or can purchase for indefinite access. The content of the e-book can be printed which is stored in a system with high quality, high speed printer in case of print-on-demand e-book. Although e-book has disadvantages like uncomfortable for continuous reading; but advantages like low cost for multiple copies, instant delivery, portability, searchability and easy to use have made e-book a popular digital resources among the users.

E-books available through Web may be free or subscription based. It is learned from R K Chaddha, Joint Secretary, Parliament Library, New Delhi in a discussion at the 8th Convention PLANNER 2012 during March 1-3 held at Sikkim University, Gangtok that in USA the rule is in process to make it mandatory for the publisher for allowing a subscriber LIC to have a few copies in print form of each e-book title. It will facilitate proper record keeping and enabling smooth payment to the providers.
Free e-books sites: Some selected freely accessible e-book sites are –

i) Project Gutenberg <http://www.gutenberg.org>

Started in the year 1971, Project Gutenberg (PG) is the first e-book project in the world. It offers over 39,000 free e-books to download or read online. The e-books of PG are free in the United States because their copyright has expired; but may not be free of copyright in other countries. Readers outside the United States must check the copyright laws of their countries before downloading or redistributing the e-books. E-books on various categories like Agriculture, Animal, Children's Book, Fine Arts, Geography, Health, History, Language and Literature, Law, Library Science, Music, Political Science, Psychology, Philosophy, Religion, Science & Technology, etc. are available here.

ii) The Online Books Page <http://onlinebooks.library.upenn.edu>

The Online Books Page was founded in 1993 by John Mark Ockerbloom while he was a student at Carnegie Mellon University. The site is hosted by the University of Pennsylvania Libraries. It facilitates access to books that are freely readable over the internet. This website has an index of over one million online books freely readable on the internet, pointers to significant directories and archives of online texts, special exhibits of
particularly interesting classes of online books, information on how readers can help to support the growth of online books.

iii) **Digital Book Index**<http://www.digitalbookindex.com>

Digital Book Index provides links to more than 165,000 full-text digital books from more than 1800 commercial and non-commercial publishers, universities, and various private sites. More than 140,000 of these books, texts, and documents are available free. Subjects included in this site are Literature & Language, History, Social Sciences, Medicine & Health, Mathematics & Sciences, Philosophy & Religion, Law, reference books which include more than 2000 dictionaries, encyclopedias, thesauri, glossaries, bibliographies, biographies etc. Other categories include Agriculture, Business, Transportation (roads, bridges, canals, & railroads, etc.), Textbooks (free & commercial), Cooking & Food, Games (chess, etc.), & Pets, Travel books, etc.

iv) **The National Academies Press**<http://www.nap.edu>

The National Academies Press (NAP) was created by the National Academies to publish the reports issued by the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the National Research Council, all operating under a charter granted by the Congress of the United States. Under the Joseph Henry Press (JHP) imprint, the National Academies Press offers books for the science-interested general public. NAP offers more than 4,000 titles in pdf format. All of these pdfs can be downloaded for freely chapterwise or the entire book under some terms of use.

**Commercial e-book sites**: Some selected subscription-based e-book sites are –

i) **Book Locker**<http://booklocker.com>

All e-books are available in pdf format in this site. The various subject covered are: Animal, Art, Biography, Business, Computer Science, Education, Environment, Fiction, Health, History, Law, Political Science, Science, Social Science, Sports, Travelling, etc.
ii) SpringerLink <http://www.springerlink.com/books>

It offers a collection of 52,548 e-books of various categories including Architecture and Design, Behavioral Science, Biomedical and Life Sciences, Business and Economics, Chemistry and Material Science, Computer Science, Earth and Environmental Science, Engineering, Humanities, Social Sciences and Law, Mathematics and Statistics, Medicine, Physics and Astronomy, Professional and Applied Computing. Springer MARC records and enhanced OCLC MARC records are available free for all eBook customers.

iii) Safari Books Online <http://www.safaribooksonline.com>

In 2001, two of the world’s most prominent technology publishers, O’Reilly Media, Inc. and Pearson Education, joined forces to create Safari Books Online. The new company was officially launched in September, 2001. Content of Safari Books includes Technology, Business, creative, digital media and personal and professional development resources.


The Taylor & Francis eBookstore features a vast collection of titles that can be purchased in the current popular formats. Prices listed on this site are for individual purchasers only. Institutional customers wishing to purchase networkable versions should go to ebooksubscriptions.com. It offers 18 e-Collections in key subject areas. These are available by annual subscription or outright purchase. The subjects included are Asian Studies, Business & Management, Communication Studies, Economics, English Language and Linguistics, Geography, Health Studies, Historical Studies, Law, Literature, Media and Communication, Middle East, Philosophy, Politics, Security, Social Work, and Sociology.

v) Questia <http://www.questia.com>

Questia is the first online library that provides 24/7 access to the world's largest online collection of books and journal articles in the humanities and social sciences, plus magazine and newspaper articles. Subject categories include in Questia are: Art and Architecture, Communication, Economics and Business, Education, History, Law, Literature, Music and

**vi) eReader.com** <http://www.palmdigitalmedia.com/>

eReader.com is the first electronic book publisher to offer contemporary fiction and non-fiction books and magazines for reading on handheld computers including Palm OS Handhelds, Apple iPhone, Apple iPod touch, Windows Mobile Pocket PC/Professional, Windows Mobile Smartphone/Standard, Nokia Smartphones, Symbian Series 60/80 devices, as well as Windows Desktop PCs/Laptops and Apple Macintosh computers. Categories of e-book available are: Romance, Suspense & Thrillers, Science Fiction, Mystery & Detectives, Fantasy, Horror, Biography & Memoir, History, Spiritual & Religion, Business etc.

**b) e-journal**

Electronic journals can be defined as any journal, magazine, newsletter or type of electronic serial publication which are available online and can be accessed using different technologies. Okerson (1991) defined e-journal as “electronic journals mean one delivered via networks, although those locally owned through a static electronic format such as CD-ROM are not specifically excluded”. With the entrance of CD-ROM technology in the mid 1980s, several electronic journals started appearing on CD-ROM. ADONIS is one of the oldest example where images of articles in printed journals were distributed on CD-ROM. “In 1989, there were almost 1,700 full-text sources in sixteen online systems. All of these projects involve journals and all of them are by definition electronic, but these journals were not truly electronic, they can at best be described as electronic versions of printed journals”(Arora, 2001, P.5). Internet based electronic journals started to appear in the beginning of 1990 of which mostly delivered as an attachment to e-mail and their back issues were mounted on anonymous ftp sites and users were required to download them from these sites.
e-journal may be a commercial or subscription-based or open access one. A list of some commercial publishers is given in the section 3.4.1 of this chapter. The commercial e-journal can be accessed from commercial publishers or form aggregators and portals of electronic journals. Open access journal gives the user to their content which is freely accessible online. Open access e-journal may be fee-based or no-fee based. In the fee-based type the author has to pay an amount for publishing and for the second type no fee is charged from the author. There are some directories/portals/gateways to search or browse open access journal like Directory of Open Access Journals (DOAJ) <http://www.doaj.org>, Open Access Journals Search Engine (OAJSE) <http://www.oajse.com>, Open J-Gate <http://www.openj-gate.com>.

c) e-database
Several bibliographic databases which were available as printed format for indexing and abstracting services started producing in CD-ROM and DVD-ROM format after the appearance of CD-ROM and DVD-ROM technology in the mid 1980s. An e-database is an organized collection of information about a particular subject or multidisciplinary subject which can be searched and retrieved electronically. E-database is of two types: full-text and bibliographic. EBSCOhost, WilsonWeb, ProQuest, Scopus are some popular e-database publishers.

d) ETD
ETD is the theses and dissertations in electronic format that is archived, organized and made accessible electronically via intranet or internet. ETDs may be a born-digital one or digitized version of printed theses and dissertations. ETD represents and brings the research output of the researcher for worldwide retrieval. NDLTD was the first repository of ETD and after that project many project on ETD came into existence. Started in the year 2000, Vidyanidhi <http://www.vidyanidhi.org.in/> is the first digital archive of doctoral theses in India. INFLIBNET established the Shodhganga <http://shodhganga.inflibnet.ac.in> project: a repository of Ph.D. theses submitted to different Indian Universities irrespective of
subject coverage with an aim to facilitate open access to Indian theses and dissertations to the academic community world-wide.

Some selected ETD repositories in India and outside are discussed below.

i) Digital repository of ETD at IISc, Bangalore <http://etd.ncsi.iisc.ernet.in>
This is the digital repository of Theses and Dissertations of Indian Institute of Science, Bangalore, India. Theses and dissertations can be searched, browsed and accessed from the collection of 1668 theses and dissertations. This repository has been developed to capture, disseminate and preserve research theses of Indian Institute of Science.

ii) Dyuthi, Cochin University of Science and Technology (CUSAT) <http://dyuthi.cusat.ac.in/xmlui>
Dyuthi is the Digital Repository of Cochin University of Science and Technology that collects, preserves, and distributes digital material.

Fig. 3.2: Home Page of Dyuthi, Digital Repository of CUSAT
(June 8, 2012)
This repository was initiated with the financial assistance by Department of Scientific and Industrial Research (DSIR), under the Technology Information Facilitation Programme (TIFP), Ministry of Science & Technology, Government of India. The Financial assistance form University Grants Commission (UGC) as major research project helps to strengthen the repository by covering more scientific productivity other than PhD theses such as scientific publications, conference E-proceedings, multi media contents, Books etc.

iii) Networked Digital Library of Theses and Dissertations (NDLTD),
<http://www.ndltd.org>

The National Digital Library of Theses and Dissertations was established in 1996. As its scope became international, the organization kept the acronym NDLTD but changed its name to the Networked Digital Library of Theses and Dissertations.

Fig. 3.3: Home Page of NDLTD
(June 8, 2012)

In 1998, interested institutions began meeting annually for what would become a series of symposia on electronic theses and dissertations sponsored by NDLTD and designed to help universities initiate ETD projects. Today, the NDLTD’s members include hundreds of
universities around the world, as well as partner organizations including Adobe, the American Library Association, the Association of Research Libraries, the Coalition for Networked Information, the Joint Information Services Committee, OCLC (Online Computer Library Center), Proquest/UMI, and Theses Canada—all working towards the goal of unlocking the benefits of shared knowledge for all.

e) e-zine
It is the short form of electronic magazine. An e-zine is a more specialized term appropriately applied to small magazines and newsletters distributed by any electronic method. Some e-zines are simply electronic versions of existing print magazines, whereas others exist only in their digital format. Most e-zines are advertiser-supported but a few charge a subscription fee <http://www.webopedia.com/TERM/E/e_zine.html>.

An e-zine shares some features with a blog and also with online newspapers but can usually be distinguished by its approach to editorial control. Magazines typically have editors or editorial boards who review submissions and perform a quality control function to ensure that all material meets the expectations of the publishers (those investing time or money in its production) and the readership.

Fig. 3.4: Home Page of Online India Today
(June 8, 2012)
Many large print publishers now provide digital reproduction of their print magazine titles through various online services for a fee. These service providers also refer to their collections of these digital format products as online magazines and sometimes as digital magazines. Some popular e-zine sites are – Geospatial Today <http://www.geospatialtoday.com>, Planet Earth <http://www.planetearth-india.com/planetearth/index.php>, India Today <http://indiatoday.intoday.in>, etc. The university libraries can include some popular e-zine sites (free or subscribed) by giving links in their library webpage.

3.4 Promoters of Digital Resources

The digital resources particularly the born-digital resources are brought to the users by the different promoters like publishers, aggregators, and the consortia. They help the individuals and the LICs to collect, buy and deal in making license on the use of the digital resources. A discussion about the various types of promoters is made in the following paragraphs.

3.4.1 Publishers

All the reputed publishers have their publications available online to the users in their website. Publishers are of two types: commercial and open access publishers.

a) Commercial Publisher

Commercial publishers publish the resources for profit making. A good number of literatures are published by commercial publishers. The commercial publisher may be a scholarly society or a purely business house. International Association of Scientific, Technical & Medical Publishers (STM) <http://www.stm-assoc.org> is a major association of commercial publisher. Two tables of commercial publishers are enlisted here selected on the basis of their coverage and popularity.
### Table 3.1 Commercial: Scholarly Society Publisher (Selected)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Publisher</th>
<th>Coverage</th>
<th>Website</th>
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<tbody>
<tr>
<td>1</td>
<td>ACM Digital Library</td>
<td>Information Technology &amp; Physics</td>
<td><a href="http://dl.acm.org">http://dl.acm.org</a></td>
</tr>
<tr>
<td>2</td>
<td>ACS</td>
<td>Chemistry</td>
<td><a href="http://www.acs.org">http://www.acs.org</a></td>
</tr>
<tr>
<td>3</td>
<td>AMS</td>
<td>Mathematics</td>
<td><a href="http://www.ams.org">http://www.ams.org</a></td>
</tr>
<tr>
<td>5</td>
<td>Royal Society of Chemistry</td>
<td>Chemistry</td>
<td><a href="http://www.rsc.org">http://www.rsc.org</a></td>
</tr>
<tr>
<td>6</td>
<td>SIAM</td>
<td>Industrial &amp; Applied Mathematics</td>
<td><a href="http://www.siam.org">http://www.siam.org</a></td>
</tr>
</tbody>
</table>

### Table 3.2 Commercial: Publishing House (Selected)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Publisher</th>
<th>Web Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Academy Publisher</td>
<td><a href="http://www.academypublisher.com">http://www.academypublisher.com</a></td>
</tr>
<tr>
<td>3</td>
<td>Continuum</td>
<td><a href="http://www.continuumbooks.com">http://www.continuumbooks.com</a></td>
</tr>
<tr>
<td>4</td>
<td>Elsevier Science</td>
<td><a href="http://www.elsevier.com/wps/find/homepage.cws_home">http://www.elsevier.com/wps/find/homepage.cws_home</a></td>
</tr>
<tr>
<td>5</td>
<td>Emerald Group Publishing</td>
<td><a href="http://www.emeraldinsight.com">http://www.emeraldinsight.com</a></td>
</tr>
<tr>
<td>6</td>
<td>Harper Collins</td>
<td><a href="http://www.harpercollins.com">http://www.harpercollins.com</a></td>
</tr>
<tr>
<td>7</td>
<td>Ingenta</td>
<td><a href="http://www.ingentaconnect.com">http://www.ingentaconnect.com</a></td>
</tr>
<tr>
<td>8</td>
<td>John Wiley &amp; Sons</td>
<td><a href="http://www.wiley.com">http://www.wiley.com</a></td>
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<tr>
<td>9</td>
<td>Sage Publications</td>
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<td>10</td>
<td>Springer</td>
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</tr>
<tr>
<td>11</td>
<td>Taylor &amp; Francis</td>
<td><a href="http://www.taylorandfrancisgroup.com">http://www.taylorandfrancisgroup.com</a></td>
</tr>
</tbody>
</table>
b) Open Access Publishers

Open access publishers publish to provide free access to users. However, the publishers make their publication fees by different methods. Some publishers collect a nominal amount to publish. In cases of economic hardship, many publishers will waive all or part of fee. These are fee-based open access publication. There is a second type called no-fee based open access publishing. Here, the publishers used to collect indirect subsidies from universities, laboratories, research centres, learned societies etc. Some publishers used to collect revenue from advertising, auxiliary services, membership fees, endowments, reprints, etc. Open Access Scholarly Publishers Association <http://oaspa.org> is a major association of open access publisher which has enlisted the following publishers shown in table 3.3.

**Table 3.3 Open Access Scholarly Publishers**

<table>
<thead>
<tr>
<th>S. No</th>
<th>Publishers</th>
<th>Web Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>BioMed Central</td>
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<td>3.</td>
<td>Hindawi</td>
<td><a href="http://www.hindawi.com">http://www.hindawi.com</a></td>
</tr>
<tr>
<td>4.</td>
<td>Indian Academy of Sciences</td>
<td><a href="http://www.ias.ac.in">http://www.ias.ac.in</a></td>
</tr>
<tr>
<td>5.</td>
<td>Ivyspring International Publisher</td>
<td><a href="http://ivyspring.com">http://ivyspring.com</a></td>
</tr>
<tr>
<td>8.</td>
<td>Medknow Publications (Publishers of Biomedical Journal from India)</td>
<td><a href="http://www.medknow.com">http://www.medknow.com</a></td>
</tr>
<tr>
<td>9.</td>
<td>MDPI (Molecular Diversity Preservation International)</td>
<td><a href="http://www.mdpi.com">http://www.mdpi.com</a></td>
</tr>
</tbody>
</table>
3.4.2 Aggregators

Aggregators are the third parties who provide access to the digital scholarly publications from the publishers. They provide common search interface for the publications combined by them. Some popular aggregators are JSTOR <http://www.jstor.org>, Lexis-Nexis <http://www.lexisnexis.com>, Project Muse <http://muse.jhu.edu>. They also offer searchable indexes with link to full-text publications from the publishers.

According to Moghaddam & Mostafa (2007), aggregators can be categorized into the following three groups –

a) Hosting aggregators

Its primary focus is to provide a hosting service for publishers-the content host.

- Ovid, SilverPlatter, Dialog, CatchWord, Highwire Press, Allen Press, the American Institute of Physics, Ingenta etc.

b) Gateways Aggregators

Those who index or categorize dissimilar content on other content host services- the gateways.

- Subscription agencies as Gateway Service Provides- SwetsNet, RoweCom, Informatics (J-Gate);
- Traditional Abstracting and Indexing Producers/Publishers – ISI, BIOSIS, CSA, INSPEC, etc.; and
- Third Party Link Service Providers – CrossRef; SFX from ExLibris (Open URL).

c) Full-text aggregators

- Perpetual Access models with archiving space for the library – Ovid, OCLC; and
- Annual Lease Access models – ProQuest, EBSCO.

3.4.3 Consortia

Consortium is a Latin word, meaning ‘partnership, association or society’ and is derived from consors, ‘partner’, itself from con-‘together’ and sors- ‘fate’, meaning owner of means or comrade. According to Merriam Webster Dictionary, consortium is “an agreement,
combination, or group (as of companies) formed to undertake an enterprise beyond the resources of any one member” <http://www.merriam-webster.com/dictionary/consortium>. Wikipedia defined consortium as “an association of two or more individuals, companies, organizations or governments (or any combination of these entities) with the objective of participating in a common activity or pooling their resources for achieving a common goal” <http://en.wikipedia.org/wiki/Consortium>. Library consortium is a group of libraries which acts for resource sharing keeping some defined goals or objectives. Resource sharing among the libraries is not a new concept. Earlier, it was in the form of inter-library loan. After that, the concept of document delivery, sharing of catalogue data in the form of union catalogue etc. were developed at different levels. But introduction of the different digital resources in the library collection, price escalation, budget cut, etc. have forced the LICs to form a group which will act for cooperative acquisition and resource sharing in a network environment. Based on the financial management and the number of participating libraries, library consortia can be classified into the following types.

a) Open consortia
An LIC can join and leave in an open consortia at any moment according to their choice. Here, the publishers who are providing the resources decide the minimum number of libraries to run the consortia and the price rate per product. A small group of homogeneous libraries of a specific discipline can form open consortia. AICTE-INDEST run by Ministry of Human Resources Development, Government of India is an open consortium.

b) Closed consortia
An exclusively defined group of libraries can form a closed consortium. The coalition, affiliation and collaboration among the members lead to the establishment of closed consortia. No member can join or leave the group according to their wish. IIM consortium is an example of closed consortia.
c) Centrally funded consortia
A central funding agency runs the consortia among a large group of libraries and directly deals with the publishers and the aggregators. For example, UGC runs the UGC-INFONET Digital library consortium among the university libraries in India which is maintained by INFLIBNET.

d) Shared budget consortia
The member libraries of the consortia run and handle the financial matters required to run it. IIM consortia and FORSA are examples of this type of consortia.

e) National consortium
A large number of libraries within a country can be provided resources under this consortium if the national level licensing of the resources can be obtained. UGC-INFONET Digital library consortium and AICTE-INDEST are the examples of national consortium working successfully in India.

f) Publisher Initiative
EIFL Direct (Electronic Information for Libraries Direct) consortium is a joint project of the Open Society Institute (OSI) and EBSCO Publishing, one of the world’s largest suppliers of journals via electronic and printed media. It provides access to over 3300 full text international journals and 5000 periodicals' abstracts and indexes and covering Humanities, Culture, Education, Medicine, general Science etc. The network of EIFL direct has members of more than 45 developing and transition countries in Africa, Asia and Europe and in over 10 countries in Africa, Europe and Latin America.

Selected Library Consortia in India
In India also acquisition of digital resources through consortia has started particularly by the initiative of centrally funding agency in higher education and research. Brief introduction of some of the selected consortium are given below.
i) UGC-INFONET Digital library consortium

<http://www.inflibnet.ac.in/econ/about.php>

UGC-INFONET Digital library consortium is the joint effort of UGC and ERNET (Educational Research Network), under the Ministry of Information Technology. The UGC-INFONET Digital Library Consortium was formally launched in December, 2003 by the former President of India Dr. A P J Abdul Kalam, soon after providing the internet connectivity to the universities in the year 2003 under the UGC-Infonet programme. The Consortium provides current as well as archival access to more than 7000+ core and peer-reviewed journals and 10 bibliographic databases from 26 publishers and aggregators in different disciplines. The programme has been implemented in phased manner. In the first phase which began in 2004, access to e-resources was provided to 50 universities who had internet connectivity under the UGC-Infonet Connectivity programme of the UGC. In the second phase, 50 more universities were added to the programme in the year 2005. As on 2nd May, 2012, 200 universities are the members of this consortium and getting the benefit of accessing e-journals for their user countrywide.

Fig. 3.5: Home Page of UGC-INFONET Digital Library Consortium

(June 8, 2012)
These e-resources covers almost all subject disciplines including Arts, Humanities, Social Sciences, Physical Sciences, Chemical Sciences, Life Sciences, Computer Sciences, Mathematics and Statistics, etc. The programme is wholly funded by the UGC and executed by the INFLIBNET (Information and Library Network) Centre, Ahmedabad.

ii) AICTE-INDEST <http://paniit.iitd.ac.in/indest>
Indian National Digital Library in Engineering Sciences and Technology (INDEST) Consortium was set up by the Ministry of Human Resource Development (MHRD), Government of India. The Ministry provides funds required for subscription to electronic resources for (57) institutions including IISc, IITs, NITs, IIMs and a few other centrally-funded Government institutions through the consortium headquarters set-up at the IIT Delhi. Besides, (60) Government or Government-aided engineering colleges and technical departments in universities have joined the consortium with financial support from the AICTE. Moreover, the INDEST-AICTE Consortium, as an open-ended proposition, welcomes other institutions to join it on their own for sharing benefits it offers in terms of highly discounted rates of subscription and better terms of agreement with the publishers. All electronic resources being subscribed are available from the publisher’s Website.

iii) FORSA <http://www.ncra.tifr.res.in/library/forsaweb/index.htm>
Forum for Resource Sharing in Astronomy and Astrophysics (FORSA) was informally launched on July 29, 1981 at Raman Research Institute, Bangalore with a vision and mission to share resources held in the libraries of the institutes where Astronomy was one of the main thrust areas of research. At present, there are eleven institute members of FORSA.

iv) IIM Consortia <http://www.iimsworld.in/consort.htm>
Indian Institute of Management (IIM) Consortia was set up in the year 2000 with the leadership of IIM Kozhikode in a meeting held in Calicut. The objective was to ensure among the IIMs optimum utilization and enhancement of the resources and to minimise the expenditure by consortia based subscriptions to the commonly subscribed databases and
journals. Having convinced at the immense potential of consortium based library subscriptions during 2002, the Ministry of HRD (GOI) took initiative and launched the national level INDEST Consortium for the benefit of all MHRD funded institutions. IIMs are major stakeholders in the INDEST Consortium and over 11 international products and services are provided to the IIM Consortium by the INDEST. The end result has been highly praiseworthy that over 1050 E-journals are directly sourced from various publishers and over 10000 aggregated full-text E-Journals. IIMs are able to get online access across all the campuses by paying a nominal additional amount.

3.5 Summing Up

We have come to know about various types of digital resources and the sources from which they can be collected for a digital resources collection of LICs. All resources may not be useful for the users of a particular LIC. After collecting the resources, the LIS professionals have to organize these resources properly so that the users can use them without pain and to avoid any resource left untouched by a single user. The next chapter deals with the digitization and its various technical aspects which are required to create digital resource from the valuable and rare documents of LICs for their maximum use and to bring them to the users over the web also.