Chapter 4

4.1 Introduction:

It is repetitively considered that Information and Communication Technologies have been playing key and a vital role for transforming the libraries to the status of reckoning importance what they are today. The new millennium has been remarked with the open system environment and this has been reflected in the Open Access Initiatives (OAI) launched in the beginning of this century. The reason for this has been large volume of information available in the electronic media and digital form. The growth of computer networks and developments in computer and communication technologies, in speed, storage and access has created vast opportunity for global access to information. It was rightly pointed out as early as in the year 2000, that “with the rapid development in IT and the emergence of INTERNET, a multitude of information sources are now available on electronic media. They include e-journals and other electronic publications – online databases, reference documents, newspapers, magazines, etc. In addition to these online sources, there are thousands of CD-ROM databases” (Ravichandra Rao, 2000). At the beginning of this century hardly 5-10% information that was available in electronic form has now been reaching to a stage of 60-65% particularly the scholarly scientific literature, particularly journals. Some details on the number of periodicals in print media and their counterpart online and on CDROM has been presented by Ravichandra Rao (2000). This growth is due to information capture and storage has been faster and cheaper and resulted in the growth of born digital information and also digital libraries. It is rightly remarked as “More and more structured text are to appear in e-journals, particularly because of the developments in Standard General Markup Languages (SGML), Office Document Architecture (ODA) and Portable Document Format (PDF)” (Ravichadra Rao, 2000).
The World Wide Web provided an impetus to this trend. As the web, the digital libraries, and information retrieval (IR) systems became a major form of information access for many users simultaneously globally. It is necessary to learn more about their interactions with IR technologies during the information search process, like search engines, meta-search engines and also augmented by federated search facilities. The human-computer interaction has become more and more user friendly and user interact is undergoing a transformation technology in all walks of life. The application of computer and communication has brought new possibilities of automatic indexing and free text searching. The electronic information environment facilitates enhancement of the speed of service, number of users served, and the quality and exhaustiveness of information provided. The merit of electronic journals in particular has been discussed by Chan (1999) as; (i) Subscription Cost (ii) Multimedia and Hypermedia Capabilities (iii) Accessibility (iv) SDI Service (v) Speed of production and distribution. The way in which users search for information to support research, teaching and creative activities are changing as new technologies and information delivery systems emerge. Libraries and information centers are compelled to plan, organize and disseminate the large amount of information according to the needs of users with the help of information and communication technologies (Varghese, 2008).

The growth and advances information and communication technology has enabled the information providers to repackage and create alternate packages, called “aggregation” as per the demand of users to have easy search, browse, retrieve revise mode of search and to access to vast collection of E-Resources at a single key stroke, that can be accessed via INTERNET in digital library environment. In fact now the E-Resources delivers a collection of data, in text, images, other multimedia products like numerical, graphical mode for commercially available for library and information centre’s, and it is rightly
pointed by Chan (1999) as one of the merits of e-journals namely “multimedia and hypermedia capabilities”. It is also possible that these may be delivered on CDs or DVDs, and over the Internet and so on. Electronic resources can be classified into two types-online and offline. Online resources are e-books e-journals, multimedia facilities, email, chat, etc., Offline resources are CD-ROM, Floppy disk, Magnetic tape. Some of the electronic sources that are commonly made available now as part of scholarly communication are;

1) E-Journals
2) Secondary Sources of Information: Reference Sources
3) E-books
4) Newspapers
5) Standards and Specifications
6) Theses and Dissertations
7) Patents
8) Technical Reports
9) Conference Proceedings
10) Institutions and people

Besides the above which might be of use for study and research in academic environment, there is a vast collection of E-Resources available now on the INTERNET that in music scores, videos, graphical presentations, animated documents and multimedia products of the reference sources like Encyclopedias, Handbooks and Dictionaries. They are available both Online and Offline (On CDs and DVDs and recently on Blue Ray discs).
4.2. **Electronic Information Resources:**

In this study the term electronic resources is alternatively used to refer to electronic information resources. The attribute of electronic resources is considered as the vast information content that is pronounced through different formats and devices, restructured and repackaged and most often stored in the virtual space in the now duly recognized as INTERNET and its manifestation World Wide Web. In fact the phrase ‘electronic resources’ has broadly been defined as, information accessed by a computer, may be useful as bibliographic guides to potential sources but, as of yet, they infrequently appear as cited references in their own right (Graham, 2000). Moreover, E-Resources refer to that kind of documents in digital formats which are made available to library users through a computer-based information retrieval system. As per Online Dictionary for Library and Information Science (ODLIS) electronic sources are “material consisting of data and/or computer program(s) encoded for reading and manipulation by a computer by the use of a peripheral device directly connected to the computer or remotely via a network such as the INTERNET (Patel and Patnaik, 2005). The commercially produced bibliographical databases which emerged as early as in 1980s are still extant electronic information sources, available both on CDROM/DVD as well as accessible via online information retrieval systems. These comprise mainly e-journals (full-text), e-books and other web-resources that are made freely available via INTERNET.

The electronic resources are dynamic, as they are continuously and regularly updated so they are becoming one of most indispensable sources of information for any organization and in particularly to libraries. There is a vast variety of electronic information sources available today as given in the following Table 4.2.1.
Table 4.2.1: Variety of Electronic Information Sources

<table>
<thead>
<tr>
<th>Formal Sources</th>
<th>Informal Resources</th>
<th>Internet/Web Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) E-Journals</td>
<td>i) Electronic and Discussion Group</td>
<td>i) Internet and Web Resources</td>
</tr>
<tr>
<td>ii) E-Books</td>
<td>ii) Databases</td>
<td>ii) Web Blogs</td>
</tr>
<tr>
<td>iii) Digital Archives</td>
<td>iii) Bulletin Boards</td>
<td>iii) Library Websites</td>
</tr>
<tr>
<td>iv) Conferences</td>
<td>iv) Web exhibitions</td>
<td>iv) Web-OPAC</td>
</tr>
<tr>
<td>v) Statistical sources</td>
<td>v) Virtual help desks</td>
<td>v) Digital/Virtual Libraries</td>
</tr>
<tr>
<td>vi) Reference Sources</td>
<td>vi) Sound Records</td>
<td>vi) Wikis</td>
</tr>
<tr>
<td>vii) Electronic Theses and Dissertations</td>
<td>viii) Subject Gateways</td>
<td></td>
</tr>
<tr>
<td>viii) Standards</td>
<td>ix) Institutional and people sources</td>
<td></td>
</tr>
<tr>
<td>ix) Patents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x) Reports</td>
<td></td>
<td></td>
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<tr>
<td>xi) Newspapers</td>
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</tbody>
</table>

The above are only some representative examples and the Internet has a very large store of information sources which depends on the users or the browsers skill and competency of search and access to these sources. Today there are many publishers who are engaged in host a vast variety of 33 information sources on the net. At later stage, it is discussed about the pricing models of web-based information sources. The availability of information in the electronic media has created an opportunity for global access to information. Electronic information environment facilitates enhancement in the speed of service, number of users served, the quantity and exhaustiveness of information provided. The electronic media, by their very nature and characteristics, provide new and exciting opportunities to its users (Varghese, 2008).

The main reasons for embarking on the collection building of electronic resources are generally accepted because of the ease of usability, readability, affordability and
accessibility and in addition to these the following are the advantages of E-Resources over the print media.

**Multi access:** A network can provide multiple points of access across the campus at multiple points in time and multiple simultaneous users.

**Speed:** An electronic resource is lot quicker to browse or search to extract information from to integrate that information in other material and to cross-search or reference between different publishers.

**Functionality:** E-Resources will allow the users to approach the publication to analyze it content in new ways by click of the mouse on search mode.

**Content:** the E-Resources can contain a vast amount of information, but more importantly the material can consist of mixed media i.e. images, video, audio and animation which could not be replicated in print.

As librarians grappled with these technological advances, they continued to make careful selection decisions for these high cost products. Most typically, a group that included subject specialists, reference librarians, instruction librarians, and technical staff made the selection decisions. However, just when librarians appeared to have mainstreamed the selection of electronic materials as they had audiovisual materials, another new technology arrived—the World Wide Web.

### 4.3 Current Trends and Developments on E-Resources:

Currently the E-Resources are emerging not only in scholarly communication but in every form of information, from A to Z subjects. The Governments, Corporate organizations, Voluntary agencies, educational institutions, Commercial bodies, Associations and Learned societies are all engaged in creating digital information and
there is an upward trend in the growth of E-Resources in every sector. This trend is effected by the advances and developments in information and communication technology which have given impetus to this growing trend. For instance, since the advent of Free and Open Source Software focusing on every human activity, there is a growth of digital libraries including varieties of information sources. After the Open Access Initiative there is a growth of building Institutional Repositories (IRs) and it is due to fact that the number of digital library software are on the increase and they are simple and easy to use. The ROAR has listed as many as 3788 IRs with nearly 2.6 Million Records. There are nearly 32 FOSS Digital Library Software listed by ROAR (Registry of Open Access Repositories, roar.eprints.org/) and commonly used software are; DSpace, EPRINT, Greenstone, FEDORA, etc. So the libraries and librarians are awed by this growth and they cannot acquire everything published this has resulted in the formation of cooperative groups and it first happened in 1948 with the Farmington Plan and then as Resource Sharing and now the Consortia concept has come into being especially Consortia of Digital Library and most them are created now to share the E-Resources and open access resources.

4.4 E-Resources Consortia - New paradigm to share E-Resources:

Due to rapid growth of information, escalating costs, and enabling technologies have fuelled both our needs and ability to cooperate (Patil, 2014). In this context, the appearance of library consortia during 1990s was indeed an important phenomenon in the library activities and services (Patil, 2014). The consortia activity in India commenced in 1998. The definition of a Consortium is described as a group of organizations who come together to share the resources as a combined objective that requires voluntary co-operation for sharing of resources. A consortium formation can be local, regional, state,
national and inter-institutional level. This initiatives for providing access to scholarly electronic resources including full-text and bibliographic databases in all subject disciplines to academic community in India was a very useful venture. It facilitates access to scholarly E-Resources to academia in the country to improve teaching, learning and research.

The library environment is currently undergoing a rapid and dynamic revolution leading to a new generation libraries with an emphasis on E-Resources growing in numbers, varieties, formats and categories and new issues are being faced by the libraries for their collection development so that the demands of users are better fulfilled. The main issues are the selection and pricing models. Electronic resources represent an increasingly important component of the collection building and management activities for most libraries. ‘Electronic resources’ require vast ICT infrastructure and issues of user behaviour which are to be tackled with assessment of the users’ awareness, attitude and information literacy skill empowerment through training. So studies on these issues are surfacing quite regularly. They either be accessed remotely via the Internet or locally the needed skills are different. Some of the most frequently encountered types of E-Resources as often mention here are e-journals, e-Books, full-text databases, Reference works databases, Numeric and statistical databases, e-images, e-audio/visual resources as each one has a different structure, content and search and access mechanisms. More and more aggregation and consolidation services have been put on the web and there is also check on the usability and downloads. These trends have resulted in the negotiation aspects on the pricing of different resources and their models. Today in India as many as 17 E-Resources consortia are operating and the trends are growing towards more specialization and customized services to a particular library group or subject areas. So more and more complexities are being added and envisaged for the future. In this context
study of user is an important issue as all this is done to fulfill the user needs in relation to their information needs and seeking behaviour. In fact the Electronic resources are becoming increasingly important sources of information for the research community and studies also imply that users prefer e-journals rather than print resources.

In order to meet the growing needs for integrating E-Resources, Web resources such as internet bookstores and various information retrieval systems in libraries should be adopted as an integrated electronic resources management system. Electronic resources providers try to make it convenient and efficient interfaces to users and librarians by integrating highly complex tasks such as subscription models, licenses and subject coverage of electronic resources. So the studies on the E-Resources with emphasis on user behaviour and to meet their growing distinct needs demands for extensive studies on user needs and user information seeking behaviour with the change in the environment from print resources to E-Resources. India does not have a very rich tradition of consortia arrangements or resource sharing amongst libraries. So far the Indian libraries are faced with several environmental circumstances that are unique to India. But in 1990s, the emerging change in publishing industries and phenomenal increase of web-based resources as well as other organizational imperatives, perhaps forced the Indian libraries to move towards a strategic partnership - as a measure of last resort. Therefore, a few efforts have been made in different levels to provide shared web-based electronic resources amongst different types of libraries in India.

4.5 E-Resources Consortia in India:

As already mentioned nearly 17 E-Resources consortia are functioning in India which are funded/sponsored by different ways and shared also be different Institutions and organizations.
Table 4.5: Digital Library (E-Resources) Consortia in India

<table>
<thead>
<tr>
<th>Type of Consortia</th>
<th>Examples</th>
<th>Institutions sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Open Consortia</td>
<td>i) INDEST-AICTE</td>
<td>1. IITs, NITs Engineering colleges</td>
</tr>
<tr>
<td></td>
<td>ii) SNDT-LISA</td>
<td>2. LIS Departments</td>
</tr>
<tr>
<td></td>
<td>iii) HELLINET</td>
<td>3. Medical Colleges &amp; Universities</td>
</tr>
<tr>
<td>2. Closed Group Consortia</td>
<td>i) NKRC</td>
<td>MCIT, DeLCON, TIFR, DRDO, CeRA, ERMED, DAE, ISI, JCCC/ICMB,</td>
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<tr>
<td></td>
<td>ii) DAE</td>
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<tr>
<td></td>
<td>iii) IIM Consortium</td>
<td></td>
</tr>
<tr>
<td>4. Centrally Funded - Consortia</td>
<td>i) UGC –INFONET</td>
<td>Universities &amp; Colleges, ICMR, NKRC, DAE, TIFR, DRDO, DeLCON, ERMED, MCIT</td>
</tr>
<tr>
<td>5. Shared Budget Model</td>
<td>i) FORSA</td>
<td>Specialized Institutions in Astronomy &amp; Astrophysics</td>
</tr>
<tr>
<td></td>
<td>ii) IIM</td>
<td>Indian Institutes of Management</td>
</tr>
<tr>
<td>6. National Consortium</td>
<td>i) UGC-INFONET</td>
<td>Universities, Colleges, University of Agricultural Sciences, IITs, NITs, Engineering</td>
</tr>
<tr>
<td></td>
<td>ii) INDEST-AICTE</td>
<td>Colleges</td>
</tr>
<tr>
<td></td>
<td>iv) NKRC</td>
<td>University of Agricultural Sciences</td>
</tr>
<tr>
<td></td>
<td>v) CeRA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>vi) N-LIST</td>
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</tr>
</tbody>
</table>

It is pointed out that during 1990s, due to journals crisis, emergence of scholarly electronic publishing, shift in print to electronic format, escalation of cost of journals – all have compelled Indian libraries to move towards a strategic partnership in forming consortium - last step in coping with the change (Patil, 2014). The major E-Resources Consortia operating in India are presented in the above Table. As it is evident from the above table that many consortia are operating in India covering many subjects. The INDEST-AICTE and UGC-INFONET which are closer to Academic and Technical Institutions were launched in 2003 and 2004 respectively. It is worth to describe here some of the above mentioned initiatives.

4.5.1 J-GATE from Informatics India:

J-Gate is an electronic gateway to global e-journal literature. Launched in 2001 by Informatics India Limited, J-Gate provides seamless access to millions of journal articles...
available online offered by 8,750 + Publishers. Presently it has a massive database of journal literature, indexed from 26,830+ e-journals with links to full text at publisher sites. J-Gate also plans to support online subscription to journals, electronic document delivery, archiving and other related services. It offers bibliographic information services to scholarly and technical electronic journal literature. J-Gate Engineering & Technology (JET) is a subset of J-Gate, indexes e-journals in the fields of Electronics, Electrical, Civil, Information Technology, Computer Science etc. Journal coverage: 4700 Indexed, 1700 free full text (http://informindia.co.in/education/J-Gate-Engineering/).

J-GATE proposes to serve as an electronic aggregator, third-party gateway and electronic archival facility for several thousand scientific journals. It hosts a large database consisting of bibliographic references and abstracts of journal articles, with links to their full-text articles at the publisher’s site. It also provides online full-text access to journals articles, over subscription. In that case User’s authentication will be done by the J-GATE interface. Importantly it facilitates and initiates towards the formation of consortia of libraries by bringing subscribers of journals from a given publisher together. For example, Informatics India with initiation from three different educational institutes has developed three consortium models.

1. SNDT University Consortia of Library and Information Science Abstracts (LISA) with other six universities,

2. FORSA (Forum for Resource Sharing in Astronomy and Astrophysics) Consortia of Kluwer E-journal consortia program with five institutes,

3. IIMs Consortia of 33 Kluwer Journals in Management Sciences.
4.5.2 The J-Gate Custom Content for Consortium (JCCC):

The JCCC especially designed for the Consortium, is a virtual library of journals or customized e-journals across gateway and database solution for the UGC-INFONET. It acts as one point access to e-journal that are available online and subscribed by the Consortium as well as journals that are available in 26 University Libraries in electronic/print form, that are designated as “ILL Centers”. The interface facilities search and browsing articles from large number of Journals including 3200 + Open Access journals and facilitates generation ILL requests on non-subscribed articles to one of the subscribing library among the “ILL Centers” of the INFLIBNET Centre. The interface triggers auto e-mail to the concerned library and printed copy of the article is sent to the requesting library (Inflibnet Brochure, UGC Infonet.)

4.5.3 INDEST-AICTE Consortium:

The “Indian National Digital Library in Science and Technology (INDEST) Consortium”, was set up by the Ministry of Human Resource Development (MHRD), Government of India, in 2003. It was initiated for “Consortia-based Subscription to Electronic Resources for Technical Education System in India". This consortium is available in three models. Presently all the IIT's, IISc, NIT’s, IIM’s and most of the Regional Engineering colleges are its members. The consortium being an open-ended proposition, welcomes any private / government-funded institutions to join it on their own for sharing maximum benefits it offers in terms of lower subscription rates and better terms of agreement with the publishers.

The Consortium has its Headquarters set-up at the IIT Delhi. The MHRD provides funds required for operation of the consortium. The consortium functions under a National Steering Committee for inter-institutional coordination and for taking decisions on policy
issues under the overall policy direction of the Government of India. The Ministry has also set-up a National Review Committee for the INDEST Consortium. The National Review Committee is responsible for overall policy, monitoring and coordination with UGC and AICTE for this Consortium. It offers a good amount of electronic resources, such as; IEL, Elsevier Science Direct, Springer Link, AST Plus, ABI/Inform, ACM Digital Library, ASCE and ASME journals, COMPENDEX on EI Village, INSPEC, SciFinder Scholar, MathSciNet, Web of Science, J-GATE (JCCC), etc. As the name suggests the INDEST-AICTE mainly focuses on Science, Engineering, Technology and Management related E-Resources, which are the subjects dealt by the AICTE also.

The INDEST consortium members include the following:

- **MHRD funded 38 Core Group of Member institutions:** IITs and IISc, NITs, ISM, SLIET and NERIST (twenty institutions); IIITs and PEC Chandigarh; IIMs, NITIE and IIITM (eight institutions)

- **Members with Financial Support from the AICTE:** The AICTE has identified 60 Government Engineering colleges or technical institutions that offer programmes at postgraduate level. These institutions are being given access to a number of electronic resources including IEL Online Library, ASCE Journals, ASME Journals, Applied Science and Technology plus (ASTP) and J-GATE for Engineering and Technology (JET).

- **Other Engineering Colleges and Institutions:** The consortium, invites AICTE-accredited and UGC-affiliated institutions to join hands with the leading Engineering and Technological Institutions in India. 15 other engineering colleges and institutions have already joined the consortium on their own.
Therefore, the INDEST Consortium is the most ambitious initiative taken so far in the country. The benefit of consortia-based subscription to electronic resources is not confined to 38 major technological institutions in the country but is also extended to all AICTE-accredited and UGC-affiliated institutions. The benefit of consortia-based subscription to electronic resources is not confined to its core members but is also extended to all educational institutions under its open-ended proposition. 60 Government/Government-aided engineering colleges are provided access to selected electronic resources with financial support from the AICTE and 102 universities/institutions have joined the Consortium under its self-supported category in 2012. The total number of members in the Consortium has now grown to 1373.

4.5.4 INFLIBNET Consortium - UGC INFONET:

Information and Library Network (INFLIBNET) Centre is an autonomous Inter-University centre of the University Grants Commission (UGC) of India. It is a major National Programme initiated by the UGC in 1991 with its Head Quarters at Ahmedabad. INFLIBNET is involved in modernizing university libraries in India and connecting them as well as information centers in the country through a nation-wide high speed data network using the state-of-art technologies for the optimum utilization of information. INFLIBNET is set out to be a major player in promoting scholarly communication among academicians and researchers in India.

The UGC-INFONET Digital Library Consortium was formally launched in December, 2003. The Consortium provides current as well as archival access to more than 7500+ 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 - the first phase began in 2004, and access to E-Resources was provided to 50
universities. In the second phase, 50 more universities were added to the programme in the year 2005. So far 209 Universities including 14 National Law schools and central universities, under the purview of UGC have been provided differential access to subscribed E-Resources, and cover arts, humanities, social sciences, physical sciences, chemical Sciences, life sciences, computer sciences, mathematics and statistics, etc. The programme is solely funded by UGC and executed by the INFLIBNET Centre.

The benefit of subscription to E-Resources would also be extended to the colleges, to begin with the College for Potential with Excellence (CPE) and autonomous colleges. The Consortium has also launched its "Associate Membership Programme" wherein private universities and other research organizations are welcomed to join the Consortium for selected E-Resources.

4.6 E-Resources Scenario in Engineering College Libraries:

Engineering college libraries plays a vital role in engineering education. It is the ‘Information Infrastructure’ hub of any engineering college. The libraries in engineering colleges are drifting towards e-world by building e-libraries which have become the necessity for its users who are tech savvy and always needs information on their fingertips. The concept of people going to library has changed, now libraries are going to people. This is because of technology and E-Resources invading library arena. The engineering college libraries have to change and integrate technology into its system and make it more vibrant centre with all facilities. This is an era of E-Resources, more precisely the one should understand the economic value of e-information because today there are multiple E-Resources in Exabyte’s are invading the market and harping on the libraries and some are made mandatory by regulatory bodies just to assist in fair pricing benefiting the libraries in large. In view of this, libraries have transformed into digital and
virtual libraries where books, journals, and magazines have changed into e-books, e-journals, and e-magazines. This has increased the global dissemination of information. Electronic resources are easily accessible in remote areas. Electronic resources solve storage problems and control the flood of e-information. Electronic information sources can be seen as the most recent development in information technology and are among the most powerful tools ever invented in human history. Electronic information sources are becoming more and more important for the academic community. It is basically pattern of adoption to change to use the e-recourses effectively to the end user. For an instance there are some issues in regard to adequacy of following E-Resources being subscribed by Libraries through INDEST-AICTE Consortium.

4.6.1 **IEEEExplore:** (IEEE - All Society Periodicals Package) with new version it has 145 e-journals and no seminar and conference proceedings and back issues of five years. Earlier INDEST Consortia had access to all E-Resources. On the other hand the cost is charged for only 145 e-journals in the package.

4.6.2 **Springer link:** It has 520 e-journals accessible, but with new AICTE package in Electrical and Electronics and Computer Science & Engineering there are 134 e-journals (Back file access since 1997). In Mechanical Engineering branch 46 e-journals (back file access since 1997).

4.6.3 **Elsevier Science Direct:** The package called Engineering plus Computer Science which consists of only 275 e-Journals.

4.6.4 **ASTM Digital Library:** This package consists of over 1700 e-books and over 13,000 articles. But without BIS Standards it is very poor site.
4.6.5 McGraw-Hill Access Engineering: Only chapter wise access. But, through INDEST Consortia downloading a full-text e-books option was available. With new package downloading option is not provided but the chapters can be printed.

4.6.6 ASME and ASCE Journals: In this package only 31 ASME and 33 ASCE journals with back file from 1983 are accessible. Here access to Seminar/Conference proceedings is not given.

4.6.7 J-Gate: It has 1700 free full-text e-journals are included with a new name called JET. But, in INDEST Consortia it was an open Access.

4.7 VTU Consortium:

The University Grants Commission (UGC) has published draft regulations (Approval of Colleges offering Technical and Professional Education by Universities) 2013 for the Engineering colleges in which they have also recommended for subscription of e-Journals. To fulfill its regulations, the Visvesvaraya Technological University (VTU), Belgaum, Karnataka, has established a VTU Consortium for E-Resources to Libraries to help the affiliated colleges in acquiring E-Resources on an affordable cost through consortium mode on the recommendation of its Executive Council. However, VTU has written to the UGC to exempt all engineering colleges of Karnataka from its recommended subscription of e-Journals since it has established its own consortium for subscription to its constituent and affiliated engineering colleges from the calendar year 2014. The colleges are informed to join the consortium for subscribing a package of E-Resources at an affordable cost which would be made available to the colleges through a mandatory membership. As on February 2014, over 132 engineering colleges have enrolled their membership to join the consortium. The expert committee has
recommended separate packages for Undergraduate, Postgraduate and Research programmes through its consortium.

**Table 4.7: E-Resource packages for UG and PG Programmes under VTU Consortium**

<table>
<thead>
<tr>
<th>E-Resources</th>
<th>UG Institutions</th>
<th>UG/PG/Research Institutions</th>
<th>MBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Springer*</td>
<td>Recommended</td>
<td>Recommended</td>
<td>Not Recommended</td>
</tr>
<tr>
<td>Taylor &amp; Francis*</td>
<td>Not Recommended</td>
<td>Recommended</td>
<td>Not Recommended</td>
</tr>
<tr>
<td>Proquest</td>
<td>Recommended</td>
<td>Recommended</td>
<td>Recommended</td>
</tr>
<tr>
<td>Proquest</td>
<td>Recommended</td>
<td>Recommended</td>
<td>Recommended</td>
</tr>
<tr>
<td>Emerald</td>
<td>Not Recommended</td>
<td>Not Recommended</td>
<td>Recommended</td>
</tr>
<tr>
<td>IET online</td>
<td>Recommended</td>
<td>Not Recommended</td>
<td>Not Recommended</td>
</tr>
<tr>
<td>Knimbus</td>
<td>Recommended</td>
<td>Recommended</td>
<td>Not Recommended</td>
</tr>
<tr>
<td>ASME (Optional package)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ASCE (Optional package)</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

* Includes E-Books  
(Source: VTU Circular 2014)

**4.8 Issues and Challenges:**

Academic libraries in India are facing problems of static budget, price hike of journals, and changing demands of users due to overwhelming specializations in field of science and technology. The library services to users are currently undergoing a rapid and dynamic change leading to new generation users of libraries with the emphasis on E-Resources. A lot of efforts have been put in past few years to overcome this problem of financial crunch by resource sharing in the context of print media too. The UGC-INFONET and INDEST-AICTE Consortium are two major initiatives for academic college library users. These revolutionary steps are providing scholarly resources including peer reviewed e-journals, e-books, databases, abstracts, standards, conference
proceedings etc. These efforts must be a boon to the library users to accelerate academic and research pursuits.

The E-Resources represent a significant and growing part of the academic library collection now. Libraries today are facing unprecedented challenges not only to provide customer-responsive services, but to do so in the face of constant change. Modern libraries are facing such circumstances where it is not just enough what you own in your library, but equally important is, what your library is able to provide access to. The paradigm is shifting from ownership of countable print resources to providing access for electronic resources. Electronic resources are clearly changing the whole scenario of how the publishers, authors, librarians and users are interfaced with the vast amount of growing information stock. But this has many implications in terms of cost, promotional activities, their management issues etc. The librarians’ functions are also gradually transforming from collection development to collection management and have become more complex with the introduction of electronic resources. In a developing country like India, different steps are being taken to disseminate information embedded in electronic resources as these are emerged as quick sources of information. In this regard consortia approach has emerged as the hallmark of libraries in order to harness electronic resources effectively. The voluminous growth of E-Resources has urged the libraries to adopt new techniques for collection development and reduce the cost of information; the reduction of cost is achieved by the e-Consortium acting as an agent on behalf of all member libraries to negotiate a purchase price of electronic resources that is lower than that available to an individual institution. The pricing is one of the challenges and issues faced by the libraries, the second is to bring an awareness among users, to understand their attitudes to change, and to build the supporting ICT infrastructure. These are some of the new challenges and issues the libraries are facing. Another issue is to designate one of the
libraries or agencies work as coordinator, for identification of libraries for each publisher, negotiation, legal matters etc. The e-consortia can be an ideal solution in present context, if that has been established and managed at the wider interests of the society and organization. The activities and operations of the library and information centers are being influenced and drastically changed with this new approach to information management. With the popularity of consortium mode of subscription, publishers have started working out best pricing models suitable for different types of consortia, whether at regional, local or national level. Most publishers already have well-defined policies and offers for the libraries subscribing as consortia. Evaluation of consortium for collective subscription of electronic resources has brought revolution in the ways the information is provided to the users in the academic libraries. It is very practical solution for subscribing to electronic resources keeping in view the ever escalating cost of electronic resources. According to Allen Kent "the success and survival of libraries will much depend on how much and to what extent the libraries cooperate with each other in future". Library consortia or buying clubs development is rooted in the history of library cooperative efforts. (Kent, 1992). Library consortia are driven by the need to provide remote users with licensed access to electronic resources that too very economically by sharing subscription cost based on number of member libraries. The larger is the membership base, the less is the subscription cost per head. Thus consortia purchasing often results in better pricing along with enhanced title access. This also provides united strength to negotiate with electronic publishers for the best possible price and rights.

The challenges of integrating E-Resources and technologies into the process of collection development in an Engineering college library and information centre are many, varied, and multifaceted. Beyond considering the selection process itself, there are many issues to consider such as budget constraints, collection development policy, well trained staff,
and ever-changing versatile technology. Academic libraries have been affected by the impact of electronic technologies on research, such as increasing demands for electronic searching capabilities, demands for access to machine-readable scholarly texts, and use of network discussion groups for scholarly communication (Shreeves, 1992). Preservation, legal issues, lack of professional skills for digital libraries, lack of co-operative attitude amongst librarians, lack of resources, lack of expertise, lack of manpower training, information explosion on the internet, technology change, political and social constraints are some of them. Digital data does not have a long enough natural lifetime to wait for better medias to come along even today some stability is achieved in some technologies.

4.9 Summing Up:

E-Resources are playing a vital role in all the fields of education to provide better services and easy access to user of the library. The vital benefits of E-Resources for academic community are;

1. It gives ability to cope up with the increased workload and control over the in-house activities efficiently accurately, cost, time and space effective.

2. Provide networking and liaison with the other libraries which helps to the resources sharing among the library and information centers.

3. Faster communication and information retrieval research results, new innovations are communicated speedily to end users.

4. Dissemination of information is very fast. Advances in Communication Technology, such as e-mail, fax, image, transfer, text transfer has made it possible to disseminate information and delivery of documents speedily to users at remote places.
5. Access to unlimited information resources accurately, efficiently and with up-to-date information at their own places.

6. Access to Electronic publications, information on CD-ROMs, etc., is easily possible.