3.1 Introduction

For any research study, review of available literature is one of the important aspects. Review of literature is a set of recent output on a particular area of a research and organized in a helpful sequence to strengthen the present techniques. The main objective of review of literature is to understand the research activities that have taken place in a particular discipline and the area of research. All the relevant literature available is reviewed here. The contribution of academicians, management scientists, research scholars, information scientists and library professionals on this topic in various dimensions has yielded in valuable set of research output. As this kind of research is new in the field of library and information science in India, an attempt is made to present review of all relevant literature published from 2001 to 2012.

The purpose of the reviewing of related literature is:

- To identify gaps in the literature
- To avoid reinventing the wheel (at the least this will save time and it can stop you from making the same mistakes as others)
- To carry on from where others have already reached (reviewing the field allows you to build on the platform of existing knowledge and ideas)
- To identify other people working in the same fields (a researcher’s network is a valuable resource)
- To increase the breadth of knowledge of the subject area
- To identify seminal works in the area
- To provide the intellectual context for own work, enabling you to position the project relative to other work
- To identify opposing views
- To put the work into perspective
- To demonstrate that one can access previous work in an area
- To identify information and ideas that may be relevant to the project
- To identify methods that could be relevant to the project

A good literature review requires knowledge of the use of indexes and abstracts, the ability to conduct exhaustive bibliographic searches, ability to organize the collected data meaningfully, describe, critique and relate each source to the subject of the inquiry and present the organized review logically and last, but by no means least, to correctly cite all sources mentioned. The researcher collected articles from UGC INFONET, available at Dr.V.S.Krishna Library, Andhra University, Visakhapatnam, Directory of Open Access Journals and the printed journals available at Dr.V.S.Krishna Library, Andhra University, Visakhapatnam and other local libraries in Visakhapatnam.

In the present investigation, the researcher has made an attempt to highlight the review of literature under three broad headings viz. 1. Selection of electronic resources, 2. Acquisition of electronic resources and 3. Management of
electronic resources. The reviewed articles are arranged chronologically in ascending order.

3.2 Selection of Electronic Resources

For various reasons the information is now available in a variety of electronic formats. There is no option for professionals except, accepting these sources in their library collection in order to meet the potential information requirements of users. For selection of electronic resources, collection development policy, pricing models of electronic resources, license agreement, evaluation of electronic resources etc, are covered.

Miller (2000) in his article titled “Electronic Resources and Academic Libraries, 1980- 2000: Historical Perspective” described how collection is to be developed in an electronic environment. Over the past twenty years, academic collection development specialists have dealt with dramatic changes, brought about by decreasing purchasing power and the growing importance of electronic resources. The collection managers have rethought their efforts and revised criteria for the selection of materials in new formats while also maintaining traditional collections.

Davis (2001) discussed evaluation of selection activities for electronic resources in libraries. For selection of non-book format the criteria is given in two levels i.e. 1. Content 2. Presentation & Format. For selection of electronic resources it is necessary to keep in mind infrastructure access method etc., besides content and format of the product. Understanding the required technology is a mandatory before going to electronic resources. In traditional
selection criteria usually requisition of Author, Publisher and Producer are taken into account. Content is another criteria in traditional collection development for acquisition of electronic resources. The author suggested considering access methods, archiving facility, licensing limitations, user delimitation, user capability and restrictions and contractual obligations.

Lucia (2001)³ studied the recommendations of the E-Books task force to understand the digital library of university of California. The status of current E-Book market and Technology, and use of E-Books in academic libraries present and future is 1. Content 2. Software & Hardware standards and protocols 3. Digital rights management 4. Access 5. Archiving 6. Privacy 7. Market and pricing 8. Enhancements and ideal E-Books feature. The issues is related to E-Content is discussed. The clarity of E-Books and print versions is also highlighted. To support scholarly collections in academic libraries the electronic books must be accessed by using suitable software. The importance of hardware is also mentioned. The issues related digital rights management and access to electronic resources and related issues are stated. This study observed little or no impact on purchase of print versions though they are available in electronic form. Further, the author expressed that the role of E-Books in academic libraries is not clear and emphasized development of standards, technologies & pricing models, to make the market viable and sustainable.

Beke and Shinde (2005)⁴ conducted a research issues relating to digital resources i.e. Selection, Acquisition, Legal aspects and preservation. Mentioned the types of digital resources such as created or converted material, scanned
image, Digital audio, Video clipping, Metadata etc. The growth of academic
electronic journals and news-letters is stated. The reasons for acquisition of
Digital resources are given: 1. Evolution and Proliferation of information
technology, 2. Changes in publishing trend – publishers are inclined towards
electronic publishing, 3. Information explosion – through improving digital
technology, attempts can be made to achieve bibliographic control over important
and useful conventional information sources in science and technology and even
social sciences, 4. Financial constraints on the part of all kinds of libraries,
5. Improving infrastructure for accessing material which advances almost daily,
6. Growing popularity of world wide web and overall realization of utility of
electronic technology in every sphere of knowledge, 7. Tremendous growth of
CD-ROM products etc. The selection criteria for acquisition of digital resources is
A check list is given to be followed for acquisition of digital resources. The details
of licensing agreement of digital resources are given. Three ways to preserve
digital resources are suggested. 1. Technology Preservation 2. Technology
Emulation and 3. Data Migration.

Bist (2005)⁵ made an attempt on managing and handling electronic
journals. The importance of Electronic resources on library and information
collection and services are stated. He also stated that the role of library and
information science profession in managing of electronic journals in a rapid
information communication technology and digital revolution period. The author
mentioned difference between electronic services, online journals and electronic
resources and also stated different definitions. Various types of accessing of electronic journals are stated. Added advantages like multiple access, accessible to all users, time consuming for print and mail process, space restriction, storage, multimedia storage etc. are discussed. Role of Library and information science professionals in the selection of electronic journals are stated. Various steps like selection, subscription, license agreement terms, backup and archival, file format, access modes, acquisition, budget, pricing options are stated. The role of aggregators on providing online access of electronic contents are stated.

Devi and Devi (2005)\(^6\) made an attempt to know how to manage E-Resources in the modern library and information science for better digital information services and challenges facing with E-Resources. Role of Information Technology and the rate of changes still is still accelerating in this era. The author mentioned about Barker three types of documents used in digital resources. i.e. 1. Static-Static are the most basic they contain` fixed information and never change their form (such as traditional online data) 2. Dynamic – Dynamic documents also contain fixed information but also able to change their outward form, the way embedded material is presented to users (such as multimedia CD-ROM’s) 3. Living-Living documents are able to change both their form (outward appearance) and these embedded information (such as information contain on the web). Elements to be considered for selection process is relevant with the demands of the users, content and scope of Electronic resources, quality of the resource, cost, type of access, technical support,
licensing agreements, installation of the supported software, and training schedules and fulfill the overall library needs.

Sandhu and Sale (2005)\(^7\) carried out a study on the collection development of Electronic Resources of the university of Salford Library. The demand from users towards Electronic Resources is increasing and also the library professionals are accepting the challenges raised in the context of Electronic Resources. Previously the librarian designed the library management systems for the print version rather than Electronic objects. The importance of dedicated Electronic Resource access and management system is brought into light and stated its importance in the libraries. The growth and history of Electronic Resource collection development at the university of Salford and expenditure trends are presented in a tabular form. The authors noted the issues and challenges of Electronic Resource and their management are discussed. The cultural change, organizational structure, developing technology, access, administration and management, authentication, archiving and underdeveloped pricing strategy & library fund allocation models are issues to be kept in mind in managing Electronic Resources in libraries.

Bhat (2009)\(^8\) made an attempt to study the use of Electronic Resources in University libraries particularly Pondicherry Library System. The growth of Electronic Resources and amount to be spent to acquire them is stated in the beginning. The author reported the use of Electronic Resources in their libraries is not promising. The author reported reasons for less usage of Electronic Resources in their library and referred the observations of exports in academic
libraries on this issue. Electronic Resources are very expensive and the awareness on online resources is not up to the mark. One of the reason identify the availability of information is huge quantity. To over come this problem suitable infrastructure and its functions is reported. The role of library web site and its advantages are studied in this context. Educating the users through web or internet is identified to promote usage of Electronic Resources.

Joyner library policy manual (2009)\(^9\) described in Joyner library policy the responsibilities of library staff for building, maintaining and evaluating collections of online resources. The scope of electronic resources is stated well. The need for revision of CDP (collection development policy) is stressed up on. The consortium agreement and resource sharing and license for electronic resources are stated. The responsibility in selection of E-Resources and the role of electronic review committees are stated. The responsibility of Electronic Resources Review Committee (ERRC) for organizing and evaluation all electronic resources and suggestions for their acquisition in academic libraries is stated. The ERRC has to discuss with vendor about the requirements of hardware and software specifications. The importance of trial version of electronic resources is highlighted the following method for evaluation is done. 1. Content 2. Curriculum needs and research emphasis 3. Visibility 4. Vendor criteria 5. Format and material type 6. Selection 7. Limitation and 8. De-selection in limitations, the language, geographical guidelines. Chronological guidelines, cost factor are stated.
The history and development of E-Resources is touched in reviews. The librarians revising the criteria for selection of materials from time to time due to the changes appearing in electronic format. The importance of selection of non-book materials and the criteria for selection of E-Resources, particularly infrastructure, access methods, etc., are given due emphasis. Suitable software to make use E-Resources is highlighted. The legal aspects, preservation of the E-Resources and their importance are thoroughly mentioned. Most of the authors realized the importance of collection development policy for selection of E-Resources.

3.3 Acquisition of Electronic Resources

Acquisition is one of the prime activities in library for collection development. Information is available in electronic form economically and acceptable. Due to developments in information communication technology, the libraries could able to use this electronic resources to satisfy the information requirements of the users. In acquisition of electronic resources, understanding the pricing model, subscription schemes, ordering procedure, apprehensions various approaches etc. is necessary.

Steenbakkers (2003)\textsuperscript{10} made an attempt to achieve the electronic publication for long period in libraries. The author reported that print versions of journals are still preferred by users and they are available in libraries for long time. The national library of Netherlands implemented the operational electronic deposit for permanent archival of electronic publications. The purpose of archival of electronic journals is to provide permanent access to them for use and
research and education. The author floated the concept of E-Deposit at national level. The archiving assessment of publishers is mentioned.

Venkadesan and Others (2004)\textsuperscript{11} proposed a strategic plan for collection development of electronic resources in JRD Tata memorial library. The scope of electronic resources and reasons for their subscription along with advantages of electronic resources such as multi-access, speed, functionality and content are discussed. The collection development policy was discussed at 3 levels. 1. Collection development policy decisions are made at the highest level (Senate library committee). 2. Selection of resources is the second level of decision making and acquisition of materials (division and department chairmen). 3. The third level is the process by which library acquires various materials, implementing, selection, decision and collection development plan (librarian). Various indexing, abstracting and bibliographic sources are available in the library are mentioned. The availability of e-journals, facilities of INDEST consortium is well stated. The on-going electronic resources collection activities are stated i.e. extending online access facility to electronic resources, back files of electronic resources for perpetual access, subscription of core resources not available on online and collection development of other resources.

Prem Chand and others (2005)\textsuperscript{12} discuss the role of UGC INFONET in promoting of E-Journals in the country through E-Journals consortium. They make an attempt to explain about the UGC INFONET project it was collaboration with INFLIBNET and they discussed about the objectives of the project. The project was developed in 3 phases in 1\textsuperscript{st} phase project was started with 50
universities were given access to UGC INFONET, in 2\textsuperscript{nd} phase they setup new 50 universities were given access and in 3\textsuperscript{rd} phase they covered remaining all universities and affiliated colleges of the universities.

Sasirekha and Others (2005)\textsuperscript{13} carried out a survey on the availability of electronic journals in engineering institutions in Tamilnadu. They covered 205 engineering institutions and reported that more than 70\% institutions are providing access to electronic resources and reported the private institutions have good collection of electronic resources. More than 58\% engineering institutions participated INDEST/AICTE consortium online journals reported high use followed by online databases. The usage of electronic thesis databases is not promising. Majority of engineering institution libraries are subscribing IEL online, ASME and ASCE journal packages.

Goswami (2008)\textsuperscript{14} emphasized the importance of open access to the information published in journals and lack of awareness to make use the facility by the libraries is studied. The importance of open access solutions for University and research centers is stated and its financial viability and it is reported that more than 25000 peer-reviewed journals published globally and it is not possible to any University library systems to subscribe all or even a part. Discussed about the open active, inactive which would help the acquisition to provide access to information at large extent. The benefits of open access and its importance are stated. Mentioned open access system idea and open access to broadest audience are significance features of open access. The author identified types of

Gajendragadkar and others (2010)\textsuperscript{15} stated the beginning of Electronic book publication in the year 1985 in Germany. According to these Electronic publications including electronic journals, electronic books, online bibliographical data bases and other primary (full text, secondary publications on CD ROM) resources. The Electronic resources are steadily increasing in Libraries. The advantages of Electronic resources such as scholarly communication content and the initiation of library staff in order to access the content are stated. The space problems and related cost of Electronic Resources in comparison with print version are stated. The author identified two major Electronic resources in libraries i.e. Electronic journals and Electronic books. The pricing models of Electronic resources such as print only, online only & print and online are discussed. Keeping in view of general policies of publishers Tata Institute of fundamental research library developed policy guidelines for acquisition Electronic journals. In the year 2004 the library shifted from print to Electronic journals. The issue related to current journal packages and journal archiving and Electronic books are also stated.

Khan and Khan (2010)\textsuperscript{16} studied the collection development of two Central Universities of India i.e. Maulana Azad Library of Aligarh Muslim University and Central Library of Delhi University. They followed a methodology and discussed on library collection, library budget, selection of study material, selection tools, electronic journals subscription, library automation and sharing
resources. Collection development and collection management are not same. A collection development includes acquisition and disposal of library material keeping in view of current and future library users. On the other hand, collection management includes managerial aspects such as Budget allocation, assessment of information access, conditions of use and storage, organization, application of methods of preservation and conservation and use of information resources. The requirements of collection development are stated well. Components of collection development policy are stated as 1. Objectives of the library 2. Philosophy of library 3. Purpose of the library 4. Brief description of the community 5. Who is legally responsible for managing the library and selection of material 6. Selection methods, Budget limitations, User groups of different ages and similar information 7. Type of material deleted 8. Indication of how the collection be built in terms of intensity level 9. Language 10. Chronological period covered 11. Geographic areas covered 12. Forms of the material covered. 13. Who is responsible for selection 14. Acquisition of foreign language materials 15. Declaration and management of donations 16. Clarification about practices of preservation/conservation and disposal and 17. Statement on intellectual freedom. They made a comparison between these two libraries thoroughly and concluded that the needs of the users should be given priority in the development of library collection and also the goals of library.

Behera and Singh (2011) discussed the problem and challenges of collection development in Indian libraries in digital era. The development of institutional repositories at national level and institutional level are studied. The
need for library and information science manpower development to manage these institutional repositories and digital inactive are discussed. The concept of digital librarian and their functions are stated well. The problem in collection development of resources in the digital environment are stated: 1. Problems of user friendly environment 2. Problem of user training 3. Problem of digital device, and 4. Problem of library classification and problem of staff development approach. The challenges of collection development of electronic resources are mentioned as 1. Challenge of collection development in electronically, 2. Challenges regarding technologically up gradation, 3. Challenges regarding financial constrains of collection development, 4. Challenges regarding information technology skills man power and 5. Challenges of user services.

Most of the authors mentioned the policy for collection development for electronic resources. The issues like perpetual access of electronic resources, online access facility etc., are given due importance. Most of the libraries are participating in INDEST – AICTE consortia for access of online journals. The pricing models for acquisition of electronic resources are stated well.

3.4 Management of Electronic Resources

Electronic resources constitute a significant part in collection development in libraries. Since acquisition of electronic resources became important in libraries, the librarians are suppose to posses knowledge on managerial aspects of electronic resources in library, such as selection of e-resources, evaluation of e-resources, organization of e-resources etc.
Pathak and Das (2000)\textsuperscript{18} carried out a survey on the role of electronic information in institute of plasma research library, a special library. Definition of electronic information and their advantages are stated clearly. The electronic information sources available at their library are mentioned. Floppies, CD-ROM network connectivity. The electronic information services offered in their library sources as home keeping operations. Information retrieval services and current awareness, E-Mail, web access and home page are discussed. The library offers repackaging of information on 40 selected areas the conversion of print material to electronic form is thoroughly discussed. It is concluded that a variety of information services can be offered by applying information and communication technology in libraries.

reports are inconsistent in their application of the definitions of variables, 3. Vendor reports are not commensurable between each other and 4. Some vendors do not report any thing. Another method to understand usage of networked Electronic Resources is through web survey. The web survey has a number of limitations. The third method of assessment based on infrastructure through which patron access it’s provided to networked Electronic Resources. This is nothing but studying the subject gate ways and their use. The advantages of infrastructure assessment are mentioned. The scope of networked Electronic Resources is mentioned as 1. Digital Libraries 2. Pre-Print & Post-Print server 3. Open Access Journals and 4. Institutional Repositories.

Flecker (2001) discussed in his article the preservation scholarly content in E-Journals. The author stressed upon the long term preservation of digital collections and found that the libraries are not giving due importance to preservation of digital objectives. The growth of E-Journals, the archiving and preservation of E-Journals are studied. Most of E-Journals accessed through a single delivery system either by publisher or agent. The issues relative to preservation are stated well. The author mentioned initiative of E-Journals archiving. The relation between publisher subscriber and archiving in thoroughly discussed. Besides, archiving of articles and the other materials that is to be preserved is stated. Suggested that E-Journal achieving is not a easy task and linked with many issues.

Arora and Agarwal (2003) studied the activities of INDEST consortium came in 2002. The genesis of INDEST need for networking and the advantages
of consortium are mentioned. The criteria for selection of Electronic resources for INDEST are stated as. 1. Well-established multi-disciplinary resources with broad coverage were preferred over highly specialized sources targeted for specialists. 2. The Electronic resources already on subscription in the beneficiary institutions were preferred over those which are not being used in any of the beneficiary institutions. 3. Resources that are electronic-only were preferred over those that are print-based unless completely unavoidable. 4. Resources that are very important but highly cost-intensive were preferred over those which are less important are less-used but low cost. 5. Resources where Electronic versions are made available free on subscription to their print versions were avoided as far as possible. 6. Selections were made on their usage/suitability to their respective institutions, e.g. Applied Science & Technology Plus (ASTP) is selected for category I & II institutions while web of science was selected for category I institutions. Also, mentioned the subscribed full text electronic resources and bibliographic databases. The members of INDEST are categorized into three, Institutions in category I (IITs, IISc), Institutions in category II (RECs, NITs, etc.), Institutions in category III (IIIT, IIITM, etc.). The Licensing issues related to INDEST are stated. The authors also mentioned important terms & conditions of license agreements – authorized users, fee for coping of information, archival backup, electronic links, Inter library loan, support of training and promotion, usage of data, protection of increasing of price, compensation for down time and for unavailability promised features and services. Download records for in-house databases etc. Various pricing models being followed are discussed.
Pandian and Karisiddappa (2004)\textsuperscript{22} stated the importance of resource sharing in the context of electronic resources. Discuss the use of Z39.50 for resource sharing in libraries. The concept of library consortium and library consortium activities in India is stated. In the context of authors mentioned department of atomic energy, Indian institute of technology, Ministry of human resources, Indian institute of management, National institute of Technology, Council for Scientific and Industrial Research, INFLIBNET and University Grants Commission etc. Standards and protocols for library consortium are mentioned metadata standards or resource description standards – AACR2 and Dublin core, Resource exchange standards – MARC, CCF, Protocol standards for resource discovery – Z39.50 and standards for Inter Library Loan – ISO10160/10161. The Z39.50 is an international standard protocol used by networked computer system for information retrieval. It enables communication between computers of various libraries in a network environment. The Z39.50 was developed to overcome the problems of networks. In 1995, Z39.50 was approved by national information standards organization. The details of functions and suitability of library consortiums are also stated.

Siebenberg and others (2004)\textsuperscript{23} studied to determine if the selection of electronic journals in the Owen Science and Engineering Library was changing students’ and researchers’ choice of journals in the paper titled “Print versus Electronic Journal Use in three Science & Technology Disciplines: What’s going on Here?” The statistics available from publishers of the journals from 1998 to 2001 were used as method for study in three Science & Technology disciplines
at Washington State University. The results showed that print journals were being used more than electronic journals. Generally, electronic journals were used heavily and the availability of electronic format enhanced the total use of most titles. Some electronic journals were used little or not at all and there were a substantial increase in the use of some print journals.

Biswas and Das Gupta (2005) noted the significance of resource sharing in Indian Libraries and mentioned the reasons there for the concept of library cooperation, library resource sharing and their objectives & function are well stated. The importance of library consortium in the context of electronic media mentioned. The growth and future of library consortium in India are discussed in these context various consortiums such as CALIBNET, DELNET, UGC INFLIBNET etc. are cited. The activities of Inflibnet are discussed in detail. In which the author mention services such as inter library loan, access to full text of publications, organization and access to internet resources, creation of digital libraries and CAT India (comprehensive national bibliographic database of the holdings of academic libraries). The functions of the library consortium are mentioned – agreement for establishment of consortium, administration of library consortium, financial control, joint work and evaluation.

Doraswamy (2005) studied the use and familiarity of electronic information resources in his paper titled “Familiarity and Use of the Available Electronic Information Resources by the Students in V.R Siddhartha Engineering College Library, Vijaywada: Survey”. The study was conducted by using questionnaire method. The findings show that 61.25 percent students are familiar
with electronic information resources, 27.50 percent of the students use the computer daily and 5.63 percent have never used it. A less percentage of students, i.e., 2.5 percent of students used CD-ROM, 33.13 percent internet, 38.13 percent e-mail, 36.87 percent search engines, and 21.25 percent use VRSCE website ‘daily’ respectively. The online databases are used by 25 percent and VRSCE catalogue’ once a month. 18.75 percent of students use online journals rarely. 42.50 percent of the students use electronic information resources for communication purposes. The main problems faced while using electronic information resources were lack of training and time.

Hopkinson (2005) studied issues relating to management of electronic journals in this electronic age. The electronic journals are categorized into three types: 1. Freely available (not same as their hard copies with more or few advertisements), 2. Freely available without any hard copies (born digital) and 3. Electronic journals with free access to subscribers of the hard copies. The issues relating to package subscription of electronic journals are mentioned. In electronic journals environment, publishers play a crucial role for their financial benefit. The difficulties in searching information in print journals are well discussed. The issues of internet protocol authentication is stated in detail. For access of electronic journals, the route be started through catalogue or journal’s list or databases. Providing access to electronic journals through IP address is most convenient in user point of view.

Jaya Prakash (2005) described about the necessity of increasing the information resources in electronic form to meet the current demand of academic
libraries and institutions at affordable cost and also discusses need and importance of E-journal consortium and resource sharing among libraries and information centers. He made an attempt to study various types of consortiums available in India and mentioned their importance, advantages and disadvantages.

Kacherki (2005)\textsuperscript{28} studied the availability of information technology and information needs of engineering college library users. The role of library in imparting knowledge besides classroom is stated in the context of information technology. The issues relating to library automation which helps the users to get access to information is studied. The importance of upgrading hardware and software is identified. The use of internet and their advantages in contemporary libraries and also electronic books and Electronic Journals is discussed. The importance of consortia based subscriptions of Electronic Resources is identified. The role of INDEST and UGC INFONET consortiums are discussed. The importance of library home page through which the usage of Electronic Resources enhancement is stated. At the end, the expectation of users are also mentioned.

Prem Chand and Others (2005)\textsuperscript{29} explained the use of electronic journals available under UGC INFONET consortium in University libraries. The concept of Electronic Journals, Electronic Publishing, Electronic Serials, Online Journals and Electronic Periodicals is stated in the beginning. The development of UGC INFONET and their services were discussed in three phases. The UGC INFONET providing access to University libraries to their web. The respective
libraries have to provide their IP address in order to access of electronic journals and electronic resources offered by the UGC INFONET. User statistics of this electronic resources is not promising. It is necessary to initiate such steps that could help to encourage the users to use the electronic resources offered by UGC INFONET. In this context, the development of infrastructure and user training played a crucial role.

Satish and Umesh (2005)\textsuperscript{30} focused light on preservation of digital items in libraries. The idea of digital preservation or digital archiving is mentioned in the beginning. The issues involved in the preservation of digital objects are grouped into three: 1. Technological issues, 2. Organizational issues, 3. Legal issues. In technological issues, the authors covered digital media, changes in technology, authenticity and context, scale and preservation strategies. The issues like cost, expertise, organizational structures, role and responsibilities & selection are stated in organizational issues. In legal issues, intellectual property rights and preservation, access & security, business models & licensing, stack holders, pricing & confidentiality, investment in deposited materials by repository are stated.

Sridevi and Others (2005)\textsuperscript{31} made an attempt to study the sustenance of electronic resources in Indian academic library environment. The advantages of electronic resources such as early access, speed, linkage, cost and multimedia are stated. And also the constraints or limitation of electronic resources are stated as financial limitations social constraints and technological constraints. The authors are also discussed - selection, acquisition, cataloguing, user access,
training and support for the staff and users. The initiatives of electronic journals and electronic content acquisition in India are stated. FORSA, CSIR, JCCC, INDEST, SONET, HELINET, UGC INFONET, etc. and their significance are stated. Its coverage on Electronic resources such as electronic journals, indexing and abstracting databases, etc. are highlighted and their use in acquisition in libraries is highlighted.

Chattopadhyay (2006)\textsuperscript{32} made a study on preservation of Digital objects and related items. The importance of preservation of Electronic Resource and concept of preservation is stated. The difference between digital and paper based material and digital preservation is stated. The objects of digital preservation are stated - To protect originals, To preserve originals and to transcend originals. The benefits of digital preservation such as preserve rare and fragile objects, easy access, multiple access etc., are stated. The Author focused light on preservation of Electronic documents by kind. Standards for digital preservation, problems of digital preservation such as technical, social and legal are stated. The solutions for digital preservation are stated in which the copy right issue, digital heritage, training for professionals, etc. are highlighted.

Chavan and others (2006)\textsuperscript{33} studied the revolution of Information Technology in Higher education. In order to equip the society with right knowledge, the IP based teaching is an essential item. Some of the area has mentioned those enhance the usage of information in electronic form (user based learning). The role of electronic library and to develop network environment is stated. The role of distance education in imparting information technology and
electronic learning concept are reported. The importance of information technology in education and relative advantages are stated as well. The authors suggested the computer education be offered right from the school education.

Gobbur and others (2006) made an attempt to study the training facility and their need in digital environment. The influence in information communication technology in libraries and their relative advantages is stated. For information communication one of the promising components is internet. The role of professionals and the skills required for library professionals in digital environment are mentioned: Professional skills, Technical and IT skills, Flexibility, Ability to work under pressure, Ability to learn quickly, Communication skills, Negotiating skills, People skills, Presentation skills, Teaching skills, Team working skills, Customer service skills, Analytical and evaluative skills, Subject skills, Project management skills and Vision. The key areas of training for library science professionals are stated as 1. Basic computer and networking knowledge 2. Library automation and 3. Strategic management. The professional should understand functions of computer and networking. The professionals have to improve knowledge on hardware and software and internet etc. At present, variety of library software’s are available, at time it would be not easy to select a software without any basic knowledge on several aspects of computer, database management, etc. Several issues raised in strategic management like competition suppliers, information services etc. The concept of digital library, information system, networks, information collection, storage, retrieval, information management and control techniques are stated.
Hangsing (2006)\textsuperscript{36} studied the use of electronic journals in North Eastern Hill University (India). The author noted, lack of sufficient infrastructure to use electronic journals is the prime reason for low use. It is reported that 50% University libraries do not have internet connection, a mandatory for the use of electronic resources. He found that the band width available in North Eastern Universities is not sufficient. There is no facility of uninterrupted power supply to the University library. He made a comparison of use of electronic resources among North Eastern Hill Universities and reported NEHU and TEZPUR Universities are far better than other University libraries. The author studied usage VS downloads and identified several issues to be attended. Most of the libraries are using electronic journals offered by UGC INFONET.

Subrata Sur and Others (2007)\textsuperscript{36} studied the impact of professional requirements for management of digital resources in libraries. The reasons for improvement of modern skills for librarians are stated. The significance of Information and Communication Technology skills in contemporary libraries in order to train library science professionals to manage the electronic resources are discussed. The concept of digital library and challenges for library professionals are stated. The skills necessary for digital librarians are grouped into 6 categories. 1. Management skills include conceptual skills, administrative skills, human relationship skills, 2. Information and Communication Technology skills, 3. Information skills, 4. Presentation skills 5. Measurement skills and 6. Search and recommendation skills. The suggestions offered at the end focused on professionals to upgrade their skills from time to time.
Arthur sale (2007)\textsuperscript{37} carried out a study on the issues related to acquisition budget in the context of changes appearing in publishing media. Observed that most of the print journals are moving towards electronic format. Most of the scholarly information is now available in electronic format. The concepts of open access journals and its implications are stated. It is reported that more than 2500 open access journals are made available through the Directory of Open Access Journals. The limitations of open access journals are stated. The concept of author side fee or public side contribution or providing to open access journals is discussed. The importance of the open access, electronic access, etc, are studied.

Soodeen (2007)\textsuperscript{38} studied the access of the electronic resources via Internet in Caribbean academic library, University of the West Indies. The main purpose of library to provide the library users with web interface to access the electronic information sources of their library. The structure of campus libraries of University of the West Indies and the management of electronic resources at the main library discussed thoroughly. The electronic resources are made available through web access. The purchase of electronic resources in this library are digitalized on selective basis. The main focus is given to the electronic and digital resources to users. For this purpose, the library opted various measures in management technology etc. A detailed notice given on selection of technology shows their commitment to satisfy the users. The interface design, three basic web enable functions are given. 1. Create / Modify the reference database,

Rani and Geetha (2007) studied the impact of technological advancement in the use and delivery of information and the role of library professionals. The importance of World Wide Web and the role of library science professionals to provide latest information to the users is stated. The use of electronic resources in Libraries and the contribution of UGC Infonet are discussed. The role of e-books and e-journals and their advantages are studied. The limitations of fee based model publishing and limitations in accessioning scholarly content is stated in the context of academic libraries. It is reported that the researchers are using information available without any restriction and no fees. The limitations of electronic resources are also stated but these limitations do not mark the use of electronic resources.

Avasia (2008) examined the movement towards digital library from traditional library. Keeping in light of technological development and their electronic management, the author identified four basic criteria for selection of electronic resources i.e., quality, library relevance, aesthetic and technical aspects. The limitations for collection development policy and achieving electronic resources are studied. In the light of facility of electronic resources such as ease of use, vendor access, rapid updating, cost savings etc. The items to be consider for management of electronic resources are given - Budget, Quality of product, Technical obsolesce, access, copy right, human resources, data migration ownership and archiving of electronic resources. The author
observed that print books and journals have certain limitations but longevity is more. In case of electronic resources due to change in technology and technological obsolesce, the accessibility to electronic resources is a problem.

Fosmire and Mobley (2008) suggested an integrated approach to managing Electronic Journals in Purdue University library. The issues of print journals and cost of them is difficult to accept in their library in relation to budgetary provisions for subscription of journals. The space problems to house the print journals are also realized. To serve the users with in information Electronic form, the limitations of bibliographic information should be kept in mind. The University library is customer to Elsevier one of the earliest publisher to offer access to Electronic journals. While developing in Collection Development Policy the goals of the Institution should be kept in mind thoroughly. The University has a responsibility to meet the information requirements of Indiana citizens. The context of open access electronic content is introduced. Access of Electronic journals is made possible through library web pages. They introduced online catalogue for all items such as electronic print and other media. They put further efforts to user friendly access to Electronic journals and Electronic contents. The Library professionals should act as link between the publishers and users. Further the author stated the role of library professionals and termed them as facilitators.

Vaishnav (2008) discussed the electronic collection development policy and stated the policy in different elements. In element one, the issues related to print vs electronic, ownership vs access, user needs vs institution needs, gate
keepers vs users selection are mentioned. In element two, the guidelines for selection issues, content, access, aggregators and support are stated well. Miscellaneous issues such as the legal, technical, copyright problems and in view of these three elements, the electronic collection policy could be formulated.

Prakash (2009)\textsuperscript{43} described in his article the role of consortia and electronic journals in contemporary society. Information revaluation passed a wave for development of libraries in many angles. Now, technology allows to access information at global level with minimum or reasonable infrastructure. The proliferation of electronic journals need for sharing them by librarians is reported. The electronic journals and their advantages like economically availability, easy access etc., are made the library professionals to go for electronic journals over print versions. The advantages of electronic journals are discussed in detail. The factors developing a electronic journals consortia are mentioned in detail. The benefits of consortium based subscription are stated as wider access to electronic journals at lower cost, access to international databases and full text resources. Archival access of electronic journals and space problem, the initiative consortia in India are mentioned (UGC INFONET, FORSA, CSIR, INDEST & HELINET).

Bajpai and Others (2009)\textsuperscript{44} studied the use of electronic resources in Indian university libraries and the role of consortia. The types of electronic resources and their advantages are given. They listed the library consortia in India :1. UGC-INFONET- journal consortium, 2. Indian National Digital Library in Engineering Science and Technology (INDEST) Consortia, 3. Inter University
Gireesh Kumar (2010)\textsuperscript{45} made an attempt to study the archiving of electronic journals. In the beginning, the meaning of archiving is stated. The author proposed archiving electronic journals by publishers, consortia, individual libraries and third party aggregators. The American chemical society name took the responsibility of archiving and some of the commercial publishers have their own archives. The National Library authorities attempted archive selected electronic resources through a project known as PANDORA (http://pandora.nal.goc.au/pandora/). The example for third party archiving are OCLC, JASTOR, Informatics India Pvt. Ltd. Etc. The digital information creators, providers and owners should have a responsibility for archiving the electronic resources.

Das (2010)\textsuperscript{46} carried out a study on the availability of electronic resources in the degree college libraries of Purulia district of West Bengal. Discussed a strategy for acquisition and promoting electronic resources. The advantages of electronic resources are stated. The scope of electronic resources management and their software should have attributes like reliability, availability, security and
portability. A three step strategy for acquisition of electronic resources is stated:

1. To subscribe open electronic resources available free in public domain. In this context the author mentioned websites of electronic books, electronic journals and free databases. 2. The second strategy is to become a part of existing library consortia are stated. The role and objectives of UGC INFONET digital library are given. 3. The third strategy is recruit an electronic resources acquisition librarians for independent subscription, the selection criteria for electronic resources are mentioned. Relevance, quality, currency, format, duplication and price & cost effectiveness, the importance of license and archiving and training for staff and users are reported necessary for management of electronic resources.

Dhiman (2010) explained the role and professional responsibility of librarians in the context of contemporary libraries. The Electronic resources are providing better and multiple access in comparison with print versions. The access to information in traditional libraries is mostly taught through library catalogues. The subject knowledge on the part of library and information science professionals is not an issue to manage Electronic resources. The communication process in Electronic environment is simple, faster and user friendly. The changed roles in the context of Electronic resources are studied. To manage digital and Electronic resources the professional have to get trained themselves to reach the user community. In Electronic environment the accessibility to materials is simple. The authors emphasized that the library and information professionals empowered with information technology skills.
The usage of electronic resources in libraries and network environment is discussed. The issues related to vendor, modes of access, license agreements, mode of payment, archiving and preservation aspects like technological, organizational and legal, utilization statistics, issues related to consortia, management skills, communication and information technology skills, staff training etc., are discussed thoroughly. The issues related to open access resources are rightly discussed by many authors. The activities of various consortia and their advantages are stated well. The De-selection of electronic resources and its importance is also realized.

3.5 Observation Based on the Review of the Literature

It is understood from the review of literature that the developments taking place in case of electronic resources are abundant. Many of the libraries are moving towards acquiring electronic resources. The importance of collection development policy for E-Resources is highlighted by many authors. The managerial aspects of electronic resources are being followed in libraries in India, but more in developed countries. A strategic plan for development of E-Resources in libraries is reported necessary. The importance of consortia and their managerial aspects are thoroughly identified. Therefore, the present study is taken up on management of electronic resources in engineering college libraries to strengthen the libraries further and manage E-Resources in a systematic manner.
REFERENCES:


