CHAPTER 2

REVIEW OF RELATED LITERATURE

2.0 Introduction

Review of literature is an attempt to identify, locate and synthesize completed research work in the field of study. It provides a clear understanding of what has been thought and done previously in the field of study and what remains to be done. A review of the related studies would give an idea about the various facets of the subject and would help in formulating the topic in a meaningful way. An attempt is made in this chapter to document review of related studies in the field.

Majid and Abazova (1998)\(^1\) have studied access of medical information by Faculty members. Their teaching styles and course requirements, they affect the use of the library’s collection and students’ perception of the library. Computer-literate faculty may feel more comfortable using electronic information sources and thus gain more from using them.

Devarajan (1989)\(^2\) conducted a survey to examine the user approach to information in the field of pure sciences. The study focused on examining the areas of research in the field of pure science, their approach to various information sources, most favorite journals, nature of search and search strategy, the users’ awareness of various services, the behavior of scientist in gathering of scientific information from external agencies, etc. The findings showed that there is a trend towards multidisciplinary research. The pure scientists were mostly interested in
reading primary journals. Abstracting and Indexing periodicals were the most important channels of information used by them. The users of pure science opined that the collections and services provided by the Kerala University library system were only partially adequate to meet their research potentials.

**Steffy and Meyer (1989)** reported the results of a survey of CD-ROM use at the Jean and Alexandar Heard Library, Vanderbilt University, Tennessee. CD-ROM users were analyzed by status (graduate, undergraduate, faculty, staff and others). Relative use of 20 CD-ROM products was studied by patron status. Data was presented for users’ ratings of: ease of use, satisfaction with number of citations retrieved, and value of citations retrieved. Users’ suggestions to improve the products, the time spent for searchers products, and the time patrons spent for conducting their searches were reported.

**Allen (1989)** looked at a number of studies undertaken to analyze patron response to use bibliographic databases on CD-ROM in academic libraries and found that – (i) users thought CD-ROMs could be used without prior knowledge or training (ii) that satisfactory answers were gained for their queries; and (iii) that patrons prefer CD-ROM to comparable printed reference tools and that the majority of patrons found CD-ROM easy to use.

The survey was undertaken at Oakland University by **Shultz and Salomon (1990)** into student satisfaction with CD-ROMs found that 1.83% of the students surveys felt that (i) using this source saved their time, and found it relatively easy to use (ii) 2. 2/3rd of those surveyed stated that if the CD-ROM was busy, they would wait for it to become free rather than use the print tool (iii) 3. 85% would choose this version over print. Similarly, Beechem Pharmaceuticals
Research conducted a survey, regarding end user searching of CD-ROM. The survey was conducted by Goldfinch (1990)\(^6\) and the results showed that it was easy to use and it saved time in library searching.

Tenopir (1995)\(^7\) conducted a survey of university libraries in the USA in 1994 to discover the impact of internet connections on reference services. Among the issues highlighted by the survey were traffic congestion, in that there were insufficient workstations for users, users using the Internet for inappropriate purposes, and users viewing pornography on the Internet.

User education is to be provided for ensuring the optimum use of electronic resources. The survey by Hart, et al., (1999)\(^8\) emphasized this aspect. Further the authors argued that libraries should play greater emphasis on outreach to the faculty, improved marketing strategies and desktop access to information. At Texas, A & M University, an increasingly greater portion of the budget was being spent on electronic resources and services. This study, a survey of a random sample of the faculty and teaching staff, was designed to determine whether these reasons and services were being used by the targeted population. The results of the study indicated that lack of information was the greatest obstacle to use the electronic resources/services.

Pickard (1999)\(^9\) focused on the impact of access to electronic information resources on learning opportunities for young people. The study examined, whether access to electronic and digital information resources have a role in breaking down barriers to learning encountered by young people. Eight specific objectives were established from the study. They are: (i) to identify and evaluate
contemporary use of electronic and digital information by young people (ii) to examine Central Government, local education authority and individual school policy documents to establish the current context (iii) to observe and examine the level of peer and tutor interaction (iv) to establish what participants assume they are doing in relation to the process witnessed by the researcher (v) to consider motivation to use electronic and digital information and the effect this has on the participants learning environment (vi) to establish the level and quality of information skills training available to young people (vii) to examine the conditions which influence use; and (viii) to establish the conditions under which access to electronic and digital information does impact positively on learning.

Saroja (2001)\(^1\) in a study assumes that in the present day society, Internet and World Wide Web have become important sources of information. She pointed out that many research study sites and resources are available on the web. The study examined the source of cyber information and discussed the need of quantitative studies regarding the information available in the cyberspace. She also examined the problem associated with citing e-resources and attempted to answer some of the questions on account in citing e-resources. The study suggested evolving studies in citing e-resources.

The study by Laerum, et al., (2001)\(^1\) is to compare the use of 3 electronic medical records system by doctors in Norwegian hospitals for general clinical tasks. Out of the 72 hospitals in Norway, 53 had purchased a licence for an electronic medical records system by January 2001, covering 77% of hospital beds. In practice, there were three main electronic medical records systems—DIPS,
Infomedix, and DocuLive (table). The DocuLive system is installed in the five university hospitals and hence is associated with the largest hospitals in the country. None of the largest hospitals had completed implementing the electronic medical records system in all of their departments at the time of our survey.

Natarjan (2001)\textsuperscript{12} described electronic resources, electronic journals and the role of academic library, and comparison and usage of electronics and print journals. He also discussed use of electronic journals by undergraduates and graduates in an academic environment, behavior of people towards e-journals, and the future of the print media.

Through a qualitative study of the work practices of interdisciplinary humanities scholars, examines the activities and resources involved in scholarship that crosses disciplinary boundaries. The results highlight fundamental features of work in the humanities in relation to the interdisciplinary processes scholars use to extend their knowledge base and craft texts for new audiences. Relying heavily on informal collaborative relationships, scholars manage their interdisciplinary information work by developing strategies for exploring and translating information from unfamiliar domains. The networks of activities and resources built by interdisciplinary humanities scholars offer a working framework for developing digital research libraries to support complex and integrative scholarly work (Palmer and Neumann, 2002)\textsuperscript{13}.

Studies of e-resources revealed differences among the use. Faculty members and other professionals in the field of Science, Mathematics and Medicine were early adopters of electronic journals and other digital library
resources and remain the heaviest and most enthusiastic users (Rowley 2001; Kidd 2002)\textsuperscript{14}.

Jirojwong and Wallin, (2002)\textsuperscript{15} have studied the use of e-resources among the faculty members in the field of medicine and science. Their findings was very impressed and stated that the e-resources, 82% agreed and 92% felt that e-resources were important to their work.

Tenopir (2003)\textsuperscript{16} has analysed the results of over 200 studies of the use of electronic resources in libraries published between 1995 and 2003. This study indicated that electric resources have been rapidly adopted in academic spheres, though the behavior varies according to the discipline. The variations with respect to the variables such as age, status, and academic position are found to be significant.

Smith (2003)\textsuperscript{17} has analyzed the variables of users’ behavior in electronic resources. The study revealed that different behaviors were identified according to variables such as discipline, age and academic position. While studying the subjects, it seems that teaching and research staff in exact and natural (hard) sciences, who were in fact the first to adopt electronic journals, are the most active users of titles in electronic format.

Fan (2003)\textsuperscript{18} has analysed electronic resources, including journals and databases for Chinese studies, collected in North American East Asian academic libraries. A small survey of 26 East Asian academic libraries in North America was conducted in May 2003 in order to learn more about
collection development practices and accessibility issues for Chinese electronic resources. After analyzing the collection, classification, and accessibility issues, the author provides some suggestions on the future development of Chinese electronic resources. After analyzing the collection, classification, and accessibility issues, the author provides some suggestions on the future development of Chinese electronic resources in East Asian academic libraries.

While transferring to electronic medium, the simple thought arises that do we want to continue with the print form. Cochenour and Moothart (2003)\textsuperscript{19} in their study about e-journal acceptance at Colorado state university probed this aspect with regard to electronic journals. Colorado state university faculty, graduate students and administrative professionals were surveyed in spring 2001 to determine their usage and acceptance of electronic journals. A majority of respondents used electronic journals at least monthly and preferred multiple access points on the libraries webpage and OPAC. Almost all respondents reported adding electronic access to print journal subscriptions, but fewer respondents supported canceling print subscriptions and relying on the electronic subscriptions. Respondents strongly supported having access to journal back runs older than four years old believed that the libraries had a good balance of print and electronic resources.

Mundt (2003)\textsuperscript{20} in a study bring out the evaluation of use of electronic periodicals and databases. Libraries are short of money and electronic media are expensive. In order to use these media correctly libraries need statistics on their use. The Project COUNTER, began in March 2002, aims to establish guide lines
on recording and presentation of use statistics. The Germen Library Association expert group on acquisition and stock development regards this as progress.

In his article “dial out” Eaton (2003) argued that while the use of electronic information services had grown enormous over the past decade. A persistent problem had been the lack of a corresponding frame work to measure their use on a consistent competitive basis. COUNTER and its first draft code of practice published in January 2003 that published to deliver consistency in electronic service responding is a good step in this direction.

The usage data for electronic resources can be obtained from vendors. The reliability of this data is to be checked with logically generated data. Duy and Vaughan (2003) have studied that vendor provide electronic resources usage statistics are not currently standardized across vendors. This study investigated the feasibility of using locally collected data to check the reliability of vendor provided data. Vendor-provided data were compared with local data collected from the NCSU libraries web servers. The study found that the 2 types of data correlate well in terms of use patterns, but that actual usage differ from many projects.

In libraries the most important tools used for getting information about documents is the catalog, the classification helps easy retrieval. These are important techniques facilitating the use of documents. Use of electronic resources also depends on the tools provided for easy retrieval. Delsey (2003) studied the distinctive characteristics of electronic resources and networked dissemination, on the ways in which those aspects of the catalog record which must be re-examined in order to respond better to user needs. Looked at user requirements as they have
been defined in 2 recent studies, first being that completed by the IFLA working
Group on Functional Requirements for Bibliographic Records (FRBR) in 1997; and the 2\textsuperscript{nd} being a functional analysis of the MARC 21 bibliographical formats
conducted for the library of Congress in 2001/2002. He considered the main
elements involved in resource discovery, resource use, characteristics of electronic
resources and networked dissemination.

The availability of variety of electronic resources made librarians to acquire
skills for collection development and management and from users to use those
resources. The IT skills needs for collection development at the University of
Botswana library was studied by \textit{Muthula and Makonda (2003)}\textsuperscript{24}. According to
them the rapid and continuing evolution resource in libraries and created pressure
from both library professionals and users to continue learning in order to provide
effective service and make adequate use of the new information materials. The
article discussed collection development practices at the University of Botswana
library in an environment of increasing electronic resource of information. The
authors provided an assessment of the performance of University of Botswana
Library in this new electronic dispensation and looked at how the library has faced
the challenges of IT.

\textit{Waldman (2003)}\textsuperscript{25} studied the relationship between freshman’s use of
library resources and self efficiency. The author argued that to encourage students
use of the library and in particular of its electronic resources it is necessary to
understand what factors encourage students to seek out information in the library
setting. Research had shown that self efficiency influences academic achievement.
The study found that the role of self efficiency plays in their search for efficiency and use of the libraries electronic resources, by surviving a class of freshman at Baruch College, New York. Their library and computer use were analyzed and correlated with their self efficiency scores through statistical analysis. It was found that use of the library correlated to the students use of the libraries electronic resources. It was also found that students who express an interest in learning about the libraries electronic resources will be more likely to have higher self efficiency.

Liv (2003) conducted a study in China regarding reading activities based on national Chung Hsing University Library, circulation statistics. One of the findings of the study in the electronic resources was heavily used and among the electronic resources e-journals had the most use counts. Valuable research is being carried out in the developing countries but researchers are hampered by not being able to access, use, and share essential scientific information. Nurturing a capability for creating local information collections is an effective strategy for sustained long-term human development as knowledge fostering cultural and scientific exchange can be assembled, thus increasing international understanding. Digitization offers the promise of increasing access to resources while preserving the original information. Digital libraries provide access to an integrated collection of print, electronic, and multimedia resources delivered seamlessly and transparently to users regardless of their physical location or the location and ownership of the information.

Awason (2003) in his study “Digital libraries in the central African sub-region: a case study of Cameroon” looks at the current state and future perspective
of digital libraries in Cameroon, which is a reflection of the situation in the Central African sub-region where she is the leading nation. It outlines the advantages and disadvantages of digitization and proposes an urgent overhauling of the information infrastructure to lay down the basis of knowledge acquisition, storage, transfer, and management; else the notion of digital libraries will continue to be a myth. We need to start now to begin our journey on this revolutionary and evolutionary path toward this future learning environment.

Suseela (2003) in her article “Academic use of electronic resources” argued that electronic publishing facilitated the resources for quick and precise search for scientific information. The paper discussed the ways and means of exploring and accessing the relevant information through the internet or web, explaining the various electronic networks its locations, highlighting the Indian scenario. The paper provides various developments that have taken place to provide facilities to the researchers while analyzing the Indian scenario. While analyzing the Indian scenario, the article points out those electronic resources are not speedily reaching to all the corners of academic circles due to (i) lack of necessary infrastructure in all the organizations/universities; (ii) budget prices; (iii) mind set; (iv) apathy towards the change, lot of work involvement while initiating library automation and hardwiring programme; (iv) the problem of digital divide; (vi) inspite of having computer and networking infrastructure, it is difficult for moderately funded organizations for electronic editions in additions to print journals.
Natarajan (2003)\textsuperscript{29} in a study described the definition of databases and the functions of the internet, which helps the Library and Information Science professionals in many ways for providing better services to their users. The paper described the different types of electronic resources available. The factors determined for quality of e-resources like, authority, content, currency, and timeliness and special attributes are discussed in detail. The consideration for valuating the e-resources are discussed under headings like content access, technical support, cost, legal and support tools. The selection of different types of e-resources and the evaluation of the same are discussed. The article concludes that Library and Information Science professionals should be well aware of the e-resources available, and evaluate before acquiring/ accessing them for their users.

It is generally agreed that humanists and social scientists will depend on complex media tools to realize the full potential of digital resources in their teaching and research, but this shift has not yet been fully realized by Ayers and Grisham (2003)\textsuperscript{30}. The overall context of studying Humanities /Social Science users in higher education is immense and complicated, however. The available, and often overlapping, perspectives, span professional societies, libraries, instructional/educational technology, pedagogical research, and distance education. One rationale for this study was to identify the special needs of Humanities /Social Science scholars, particularly as they relate to the future of liberal arts education in a digital age.

Sarasvady and Khatri (2003)\textsuperscript{31} in their article “Study of the use of electronic resources for implementing library consortium” studies on the use of electronic journals by the academic users of a few selected libraries. They believe
that these types of studies will reinforce their efforts in building concrete consortia and shared use. And also the results of these kinds of studies offer a platform with stronger inputs for building effective consortia. For this study, they took a total of six selected libraries based on the widespread use of the electronic resources. Out of the total six selected libraries, two were university libraries and four were at the college level. The survey was initiated in one month, which elicited responses from participated users. The data sets for the study were 200 print journals and the corresponding electronic versions of them. The results of the study offer significant information on the level of awareness and use of electronic journals in academic institutions, the characteristics of the users and their evaluation of the journal collection. In the last ten years there is phenomenal increase of the electronic collections and the correlation between the availability and awareness found among teaching and research users where that many of the participants were aware of the electronic journal collection available in their institution. The young participants who use electronic journals show high level of awareness of the collections and willing to resort for more electronic journals. Hence investigators believe that the data and results would enable to target the users with respect to the age groups and disciplines for orientation. Interestingly the users have knowledge about availability of electronic resources, but many use them as the supplementary way to use information. Many users need to know the complete potential of the electronic journals. However, the preference for the electronic format is related to the discipline and age of the respondents and is higher among academic staff in Biomedicine and Engineering, and among the younger generation of academic users. A large number of participants understand
that the number of electronic journals is increasing and the number of print versions is decreasing, and they resort to the electronic format. Many participants reveal that they would use the print occasionally if more electronic journals are available and this is observed particularly for young generation. While the participants in Biomedicine and Engineering and particularly the younger generation was more favorable to change, whereas those in Social Sciences and Mathematics and the older users were reluctant to a notable degree. They observed that doing research increase the opportunity for using electronic journals. They also found a significant correlation between the reason for consulting the journals and the age of the participants. The young users are inclined for electronic journals particularly for study, research and carriers, whereas older participants use them for both research and teaching. The broader level findings show the greater use of electronic journals among young academic users which would be not only due to their high level of knowledge with new technologies, but also to the fact that they are more active in carrying out research. They conclude that many users will resort to electronic journals if more orientation programmes are conducted. They also understand that the studies in rural institutions may offer different equations. If studies are conducted prior to the consortium formation, it may yield fruitful results in application.

There are many reasons for the under-utilization of electronic resources. In their study Ramzy and Rehman (2004)\textsuperscript{32} threw light on this aspect. According to their study, electronic resources are vital, but extremely expensive and medical librarians are genuinely concerned about their effective use. It is a widely held view that low awareness and poor skills are among the primary reasons for their
under utilization. A questionnaire – based survey of health professionals affiliated with 3 teaching faculties of Kuwait University was conducted to find out the nature and extent of the use and the reasons for low use of these resources. Responses were received from 70.9% of the faculty members. They reported that time constraints, lack of awareness and low skill levels were among the primary constraints they experienced. A large number of them proposed a variety of measures of formal orientation and training to become more effective users.

**Torma (2004)** in a study elaborated relations between digital library use by university faculty, users' discipline and the availability of key resources in the Finnish National Electronic Library (FinELib), Finnish national digital library, by using nationwide representative survey data. The results show that the perceived availability of key electronic resources by researchers in FinELib was a stronger predictor of the frequency and purpose of use of its services than users' discipline. Regardless of discipline a good perceived provision of central resources led to a more frequent use of FinELib. The satisfaction with the services did not vary with the discipline, but with the perceived availability of resources.

**Childs and McLeod (2004)** in their paper focuses on issues surrounding the sharing of research records, research data and networking of systems. They arose from a 2003 Joint Information Systems Committee (JISC) funded research project undertaken at the School of Informatics, Northumbria University. Five research projects undertaken within the School were studied and a total of 14 project researchers plus research directors and research administrators at school and central levels were interviewed. A group comprising the Pro-Vice Chancellor
(Research), research directors and research administrators acted as an expert panel. The project itself also formed a small case study. Issues identified by the participants covered: confidentiality, digital records joining up of people and systems involved, primary research data, resources, retention management, re-use/re-purposing of data and information, roles/responsibilities, security, sharing/use and systems, covering processes and procedures as well as IT systems. Four main solutions were offered to address these issues: guidelines, standards and policies; training; systems; and resources. One crucial requirement to emerge was the need to share research records and data, both inside and outside the university. This could be achieved through the development of a virtual records centre/archive. The implementation of such a facility is not insignificant and is discussed with reference to relevant national initiatives.

Another notable program is **Mellon’s (2004)** Librarian / Faculty Fellowship on Undergraduate Research at Berkeley. It aspires “to create a program that encourages and facilitates faculty collaboration with the library and other partners to build undergraduate knowledge of information resources; enhance student research and information competencies; connect faculty research more effectively with classroom teaching; and provide extended opportunities for faculty to mentor creative student discovery and research both within and beyond the classroom.”

**Crawford, et al. (2004)** has studied the use of electronic information services and information literacy on Glasgow Caledonian University students, both past and present. The study was undertaken as part of the LIRG/SCONUL Value and Impact study and sought to establish direct evidence of the impact of
Electronic Information Services (EIS) on Glasgow Caledonian University students, both past and present. Evidence of the spread of information literacy among students and alumni was also sought. An electronic questionnaire was administered to current students and a traditional paper questionnaire was sent to alumni using the University's alumni database as a sampling frame. The outcomes from both questionnaires were used to create a longitudinal picture and establish key indicators. It was found that respondents broadly understood the concept of information literacy although this was much more marked among alumni as a result of the experience of work. The relationship of work activity to information literacy was found to be central and alumni felt that an understanding of information literacy gave them a distinct advantage in job finding and seeking promotion. Unemployed alumni are correspondingly disadvantaged. In many cases information seeking skills, learned at university, could be directly applied to the workplace and scholarly methods were found to be spreading there although the attitude of employers was varied. It was also found that, although the library does have an impact on users, other factors such as progression and retention, and an innovative learning and teaching agenda are also important.

“Use of electronic resources and its influence on high school students in Trivandrum District” is a study by Syrus (2004)\(^\text{37}\). The study was based on a questionnaire survey conducted among 180 high schools students in 15 government schools in Trivandrum district in Kerala State. The objectives of the study were as follows: (a) to identify the different types of electronic resources, the school students prefer in seeking information (b) to find out the influence of
electronic resources (c) to find out the use of electronic resources by government high school students.

The major findings were: (a) most of the school children use electronic resources only for entertainment (b) most of the school children are not using internet facilities and information gatherings (c) their most preferable electronic media is TV.

Use statistics of networked electronic resources in libraries began its collection development in electronic resources and it became necessary to get statistics regarding the use of networked services and e-resources. A web based system for collecting these statistics is described by Bertot, et al., (2004)\(^38\) in their research article, “Capture usage with e-metrics”. According to them, the continuing shift in library and resources away from physical objects to electronic ones has complicated the process of measuring the activities of libraries, where such measurement was once building / physical resources based. There is a pressing need for e-metrics as method for gathering statistics on the use of networked services and electronic resources. The Information Use Management and Policy Institute at Florida State University is developing the E-Metrics Instructional System (EMIS), a web-based interactive instructional system to help librarians understand selected e-metrics, how to collect them, and how to use them for decision-making and communication.

Jacso (2004)\(^39\) discussed project COUNTER incorporated in the UK as the non-for-profit organization. Statistical information system is emerging to provide informative statistics about libraries use of digital resources. COUNTER has great potential for making educated decisions in licensing digital journals.
Sasikala (2004)\textsuperscript{40} in her article “Collection development and electronic information sources”, describes the issues associated with collection development of electronic resource and identifies three areas of collection development that seem to be problematic such as selection, acquisition and inter institutional cooperation. This article also explores the policy to be adopted for collection development, and the criteria for evaluating electronic resources such as content, added value, ease of use, maintenance standards equipment and output.

The Institute of Museum and Library Services (IMLS) (2004)\textsuperscript{41} has funded a major Online Computer Library Center (OCLC) study of electronic research titled, “Sense-Making the Information Confluence.” The project’s goals are to understand the hows and whys of electronic resource use.

A questionnaire-based survey was used by Dadzie (2005)\textsuperscript{42} in his study "Electronic resources: access and usage at Ashesi University College". The purpose was to investigate the use of electronic resources by students and faculty of Ashesi University, Ghana, in order to determine the level of use, the type of information accessed and the effectiveness of the library's communication tools for information search. A questionnaire-based survey was utilized. It consisted of 16 questions to determine level of use, type of information accessed, assessment of library's communication tools, problems encountered when using electronic resources and ways to improve the provision of electronic information in the community. The questionnaire was distributed to all students, faculty and administrative staff in order to reduce the generalization of the results. The questionnaire was pre-tested on six students from three different year groups and some amendments were made. A total of 169 questionnaires were therefore
distributed and 141 completed questionnaires were returned, giving an overall response rate of 83 per cent. Survey responses were coded and input into Excel for analysis. The major findings of the study found that general computer usage for information access was high because of the University’s state-of-the-art IT infrastructure. Usage of some internet resources was also very high, whilst the use of scholarly databases was quite low. The low patronage was attributed to inadequate information about the existence of these library resources. The study recommends, among others, the introduction of information competency across the curriculum and/or the introduction of a one-unit course to be taught at all levels and the provision of more PCs on campus.

The article of Ebersole (2005) reviews research conducted in 1998–99 examining students’ perceptions and uses of the World Wide Web for academic purposes. Recent developments in the Web that may be of particular interest to educators and parents of students are considered. Since the mid-1990s the internet, and more specifically the World Wide Web, has been eagerly adopted by school districts, administrators, teachers, parents, and students. Recent data from the National Center for Educational Statistics indicates that, in the fall of 2002, 99 percent of public schools and 92 percent of instructional classrooms were wired for internet access.

Sreelatha (2005) conducted a study on the perception and use of e-journals among the doctoral students of Calicut University. The major objectives of the study were: to assess the awareness of doctoral students about e-journals, to assess the degree of utilization of e-journals, to assess the level of satisfaction, to verify whether doctoral students were making use of INFONET and to find out the
factors hindering that use of e-journals. The study revealed that advanced searching method was followed by a majority of the students. Encyclopædia Britannica was the most frequently accessed aggregator. The study brought to light that the respondents were quite aware of the importance of e-journals and INFONET in research.

Sajila (2005)\textsuperscript{45} conducted a study on the use of electronic information resources in the library and information centre at the Indian Institute of Management, Kozhikode. The major objectives of the study were to assess the current use of electronic information resources, to examine the frequency of use, to find out the most favored electronic information resources and to assess to what extent users were satisfied in electronic information resources. The study used a questionnaire for eliciting responses from the users. For analyzing the collected data, the percentage method was used. From the major findings of the study it was evident that most of the students used digital library resources for project work, and research assistants and teachers used them for research purpose. All the categories of the users were fully satisfied with the systems and services. The majority of the users were of the opinion that electronic resources are easy to access.

Existing user research is as diverse as the resources available for study and the motivations for understanding users. As a result, there is no single, uniform approach that can be gleaned from these available studies. There is a relative hodgepodge of excellent studies that are germane to the improvement of targeted projects or reflect broad surveys of librarians and library users in academic settings. Electronic journal and library use studies may be the most abundant.
Meta-research projects, which compile and analyze findings from multiple user studies, offer valuable insights but are limited in number and scope, and each study has its own limitations in the context of project (Khoo and Ribes, 2005)\textsuperscript{46}.

Khoo and Ribes (2005)\textsuperscript{47} have organized existing user studies into four primary areas: (1) electronic resource/digital library use studies, (2) cultural heritage research, (3) evaluations of specific sites, and (4) image services. The investigators identify a fifth emerging area, complex media environments, for which, to their knowledge, robust user studies \textit{per se} are not yet available. These rich media environments include N-way video, Global Information Systems (GIS), virtual reality, simulations, and games. As mentioned above, there is a burgeoning literature on educational technology assessment and evaluation in general. There is also a smaller literature focused on the question of cost effectiveness of educational technologies in various academic environments.

The objectives of the study on, “Knowledge and use of electronic information resources by medical sciences faculty at the University of West Indies” by Renwick (2005)\textsuperscript{48}. Further the study determine faculty’s knowledge of electronic resources, access to a computer, use of electronic resources available at the medical science library, and the training needed and to identify areas for further research. A survey was conducted among faculty members in medicine, pharmacy, dentistry, and veterinary science at the University of West Indies. The questions covered computer literacy, computer access and location, knowledge and use of electronic resources and training needs. The response rate was 70\% of whom 97\% were computer users. 73\% used computers daily and 82\% felt that their computer literacy level was average or beyond. Overall it was found that faculty members
had high awareness of the electronic resources were available by the MSL medical science library.

To study “Familiarity and use by the students of digital resources available in the academic libraries of medical science university of Isfahan (MUI), Iran” by Asemi (2005) is an attempt to determine the present status of familiarity and use of digital resources. It was felt that use of digital resources is still poor among the medical students of the universities in the developing countries. The study investigated the familiarity and use of digital resources by students through on-line and off-line databases of the central library. The subjects of the study were the students of the Isfahan Medical University. The study included a random sample of 250 students. The study revealed that use of e-resources is associated with familiarity of the same.

Rajeswari (2005) conducted an analytical study on the use of electronic resources and service by faculty, research scholars and students of Sri Padmavati Mahila University (SPMU), Tirupati. A questionnaire was distributed to stratified random samples. The samples consisted of three groups, namely, teaching staff, research scholars and postgraduate students. The response rate was 82%. The study revealed that majority of the teaching staff used Internet, e-mail and OPAC facilities. Most (36.2%) of the research scholars had the opinion that INFLIBNET services met their information needs. The respondents comprised of 36 teaching staff, 42 research scholars and 58 PG students. The study revealed that internet access, e-mail and OPAC are used for almost all staff users, e-books, e-journals are found to be less used by PG students. It is observed that e-mail dominates over the other purposes for which they use internet. Use of the e-journals was higher
among research scholars. Most users benefited from the internet and INFLIBNET services available in SPMU library. Majority of the users are utilizing the OPAC system in the library. CD-ROM database are being used only rarely by staff and students.

The primary focus of the paper “Electronic Resources usage in the academic and research institutions in Tanzania by Manda (2005) is on the use of electronic resources available through the Program for the Environment of Research Information (PERI) of the Internet Networked for the Availability of Scientific Publications (INASP) in 10 academic institutions in Tanzania is also considered. Although both staff and students have the capacity to access electronic resources, there is a danger that various levels of adoption and use of those resources will lead to an institutional gap between information and individual scholars and resources. Problems identified included limited availability of basic technical and human resources, limited access to play by students, inadequacy of end user training and limited levels of use of PERI resources. The paper also provided policy recommendations on training in the use and marketing of electronic resources for specific user groups and resources.

Electronic information in the special libraries of Kerala in a study by Mohammed Hameefa (2005) investigated the use of electronic resources in special libraries in Kerala. The study explored the specified factors that promoted the use of electronic resources. It was conducted in 50 libraries. The study reported that majority of the special libraries in Kerala have no OPAC, even though most of the libraries undergone computerization. The study revealed that very few libraries are using commercial on-line data bases. Only two libraries have a separate digital
library. Only three special libraries in Kerala are participating in library consortia and this is for accessing e-journals. The study also revealed that all the special libraries in Kerala are providing e-mail and www facilities. Majority of the libraries under study are providing access to e-journals.

White (2005) aims to use two case studies of digital archives designed by library and information professionals and historians to highlight the twin issues of academic authenticity and accuracy of digital representations. Using secondary literature, the author established a hypothesis about the way in which academic researchers engage with electronic texts. It is argued that academics are often distrustful of the authenticity of much that appears in digital form and doubtful as to its accuracy. The case studies are used as a means to demonstrate the measures that library and information professionals can take to assuage these concerns. Given reasonable financial resources and staff, it is relatively easy to adopt a transparently academic approach. Accuracy is much more problematic, and is often compromised by the unwieldy nature of these types of projects. Most evaluations of digitization projects have not focused on the issues of academic authenticity and textual accuracy; indeed, the latter is difficult to gauge when the ASCII text is hidden and where there is little incentive for designers to be honest about the potential flaws in their search engines. Also, there has been little discussion in academic literature on the distribution of staff and financial resources within projects.

This collaborative database project, involving five US universities and historical societies in Washington, Oregon, and Idaho, has sought to encourage online researchers to think more deeply about the digitized
primary sources featured. The project intended to serve as a model for other institutions that wanted to share collections and stimulate public interest in and use of those collections. This study focuses on how the authors incorporated pedagogical elements into the design of the database, and how they have encouraged K-12 teachers and college students to use it (Mercier and Wykoff, 2005)54.

Large-scale consumers of information such as lecturers and researchers have now-a-days widely adopted the digital document. These professionals cannot suffice with disaggregate data but instead need full text documents. These documents include the research production of their colleagues and the teaching resources designed both within and outside their institution, be they commercially published or not. The main source of information for these professionals is the internet, which has become a victim of its own success. If lecturers and researchers claim to have gained better information accessibility, thanks to the Web, they still must account for the time needed to examine the results obtained. Moreover, many of these net-users still camp with difficulties in information retrieval, where all too often their results are unsuccessful or unsatisfactory. University lecturers and researchers at an Engineering College in Nantes on the West coast of France base this paper on a survey that examines the use of and performance with digital documents. The study was conducted during the year 2003 with about 70 persons from various fields and disciplines including Physics, Computer Science, Sociology, etc. This study looks at the lecturer-researcher in the capacity of information seeker and reveals a rather sedentary and
autonomous figure, one who first relies on the resources offered by his/her own computer. Even though they are partly unsatisfied, they claim no time to waste on improving their information search skills. New tools bringing relevant, rich, and reliable scientific information and documentation are of interest to them. Certainly, if this would help them capture that which would otherwise have been neglected when only classical search techniques are applied. However, these tools must be simple to use, fast, and available where and when needed. This study is part of a user-centered design approach in the construction of an open archive platform, planned to create (2005)\textsuperscript{55}.

Manimekalai, \textit{et al.}, (2006)\textsuperscript{56} in their study “Internet use pattern among the students in Annamalai University” primarily focused on the extent and pattern of use of the internet among 150 students in Annamalai University. The study investigated the relationship between motivational variables, demographic variable and the internet usage activities. The findings revealed that the higher the class, more the usage of internet resources. Irrespective of the faculty or subject the students work on the Net was in the same frequency. It was also shown that perceived ease of use, perceived usefulness and perceived enjoyment are the important drivers of internet usage.

“Usage of the e-resources and academic libraries in Chennai” a study by Kanniyappan, \textit{et al.}, (2006)\textsuperscript{57} discussed the impact of electronic resources on the academic libraries in Chennai. The study was conducted among students from 3 engineering colleges such as MNM Jian Engineering College, SMK Fomra Institute of Technology and PMR Institute of Technology in Chennai. 150 questionnaires were used for analysis. The objectives of the study are to
understand more about student usage of electronic resources and technology, their experiences with technology and their attitudes and expectation about technology resources and identify areas for improvement of services. The study found that all the respondents used computer and on-line service in the library. Majority of them had awareness about electronic resources. Majority of the participants felt that electronic resources were useful for them. Most of the respondents faced problems in using electronic resources.

“Humanities Scholars’ Information - seeking Behaviour and Use of Digital Resources” by Rimmer, et al., (2006) describe the User-Centered Interactive Search Project (UCIS) that is concerned with the needs and behaviors of humanities scholars both in digital and more traditional information environments. The results of this project are being used to develop digital resources to better support these work activities. Here, an initial set of results are offered, based on investigative interviews with a variety of humanities scholars concerning their patterns of information seeking behaviors and research experiences. The interviews reveal how humanities scholars’ research processes are helped and hindered by traditional and electronic resources.

Ramlogan and Tedd (2006) conducted a study on the use and non use of electronic information resources of the undergraduates at the University of the West Indies. The purpose of the research was to gather some empirical baseline information on the use / non-use of selected, subscribed electronic information service among full time 3rd year graduates. The other broad objectives of the study were to present the survey findings, evaluate the survey’s findings and propose necessary recommendations. The research design involved a mixed quantitative
and qualitative approach: a user survey using semi-structured questionnaire and face – to face semi-structured interviews. The major finding of the study was that over half of the total respondents had not accessed any of electronic information services. Lack of awareness of the service availability was revealed as the overriding factor for non-use. It was concluded that undergraduates made infrequent or no use at all of certain electronic information services largely from lack of awareness.

Romanov and Aarnio (2006)\textsuperscript{60} evaluates medical and dental students’ utilization of electronic information resources of the medical faculty of Helsinki University, Finland. A web survey sent to 837 students (49.9\% responded). Use of electronic resources differs among students. Forty percent were non-users of full-text articles. Information-searching skills are correlated with the use of electronic resources, but the level of basic PC skills plays not a major role in using these resources. The student data shows that adequate training in information-searching skills will increase the use of electronic information resources. Twenty-four per cent of medical students and nineteen per cent of dental students searched MEDLINE times/month for study purposes, and thirty-two per cent and twenty-four per cent respectively for research. Full-text articles were used 2+ times/month by thirty-three per cent of medical and ten per cent of dental students. Twelve per cent of respondents never utilized either MEDLINE or full-text articles. In multivariate models, the information-searching skills among students were significantly associated with use of MEDLINE and full-text articles. Among 418 respondents, eighty-three per cent of medical and eighty-four per cent of dental students had a computer with internet connections at home. Thirty-four per cent of
students used a home computer for studying four or more hours per week. Twenty-five per cent of students used campus computers for studying four or more hours per week. There was a significant correlation between the working hours with a PC at home and working hours with a campus computer ($r = 0.198, p < 0.001$). After the second year of study, the medical students scored higher on scores of 'PC Skills' and/or 'Search Skills' as compared to dental students. These differences were significant between medical and dental students among the third-, fourth- and fifth-year students. On the whole, only one-third of medical students and one-tenth of dental students were regular users of full-text articles. However, the use of full-text articles increases moderately toward the end of study among both medical and dental students, which is a trend similar to the use of MEDLINE for research. These findings may be explained by the fact that the students are doing more independent work (e.g., theses) at the end of their studies. During the latter half of the study period students also need more intensive clinical perspective on various topics, which is attained through clinical training and careful reading of articles about clinical research. Another explanation for the outcome is that the students become more familiar with the use of biomedical information sources during their years of study. In order to support the use of primary scientific information resources, the use of full-text articles should be encouraged in the medical curriculum. Additionally, student skills in searching references from databases, and reading full-text articles should be improved with a revised training program. The level of basic PC skills does not seem to be an important factor in students' use of electronic scientific resources.
Traditionally, standard catalog records have provided bibliographic data that mostly address the basic features of library resources. At the same time, catalogs have offered access to these records through a limited array of names, titles, series, subject headings, class numbers, and a relatively small number of keywords contained within descriptions. Today's catalog users expect access to information well beyond what can be offered by traditional approaches to bibliographic description and access. By pursuing a suite of projects, the Library of Congress (LC) has responded to the challenge of enticing patrons to continue to include the online catalog among the tools they use for information retrieval. Drawing extensively on the power of automation, staff of LC's Bibliographic Enrichment Advisory Team (BEAT) have created and implemented a variety of initiatives to link researchers, catalogs, and Web resources; increase the content of the catalog record; and link the catalog to electronic resources. BEAT's ongoing work demonstrates how, in the electronic era, it is possible to provide new and improved ways to capitalize on traditional services in the digital age. This paper illustrates these points by focusing on BEAT's tables of contents projects to demonstrate how library automation can make significant bibliographic enhancement efforts quick, easy, and affordable to achieve (www.biomedcentral.com)\textsuperscript{61}.

The paper seeks to describe the setting up of The Energy and Resources Institute (TERI) digital library, which provides better single window access for researchers to access the structured information from their desktop. The aim of this paper is to share the experience gained and invite comments and suggestions for further improvement. The paper describes a
case study of TERI’s Integrated Digital Library resources and digitization in
detail and how the digital resources can be accessed through a single window.
It also deals with basic problems and suggests practical solutions. The paper
finds that TERI Integrated Digital Library has been created to provide access
to all digital and digitized offline and online resources, online e-journals,
electronic documents and virtual resources, and virtual libraries. The purpose
of the integrated library is to provide a single window to researchers, through
which they can access all the resources. Once users are able to access the
Digital Library homepage, all the electronic resources are accessible using
linkages with a single click, no matter whether they are available in a
database or as a simple file in a virtual collection. A physical digital library
has been created to address access to all the LAN connected systems that
provide CD-ROM access and journals and books downloaded or purchased
for all time free access to in-house users (Deb, 2006)\(^2\).

Harley, et al., (2006)\(^3\) in their study describes user research at the Getty
Museum that resulted in a redesign and rethinking of that institution’s site to meet
the needs of three different types of user profiles. The Cultural Content Forum,\(^4\)
based in the U.K., commissioned research to identify, analyze, and disseminate
material related to the evaluation of digital cultural heritage resources. The 2003
report attempted, through a survey of cultural heritage institutions, to analyze
multiple user studies. Its primary goal was to seek an intersection of metrics used
across common sites. It also developed user-profile characteristics that could help
to generate a standardized profiling approach. The work promised further
exploration of two areas: (1) the identification and definition of metrics and
measurements used in evaluation projects; and (2) the identification and definition of a range of user profiles for use in evaluation work and for establishing methodologies to facilitate comparison across projects and domains.

Perhaps the most exhaustive meta-research project is a recent report from the Council on Library and Information Resources (CLIR) (Tenopir, 2003). The research summarizes findings about the use and preferences for print and electronic services in academic libraries, drawing from 200 different studies published between 1995 and 2003. The report concludes that, overall, experts in different disciplines have different usage patterns of digital resources, and that students and faculty alike are more likely to adopt electronic resources if they are convenient, relevant, and save time. This valuable study however, is too “library-centric” for our purposes and does not include research about the use of text or non-text resources developed outside of library contexts (www.digitalresourcetestudy.berkeley.edu)64.

Lohar and Roopashree (2006)65 in a study analyzed data to cover the use of electronic resources, how the electronic resources improved the academic career of the faculty, and the problems faced while using the electronic resources. They conclude that the main intention of the use of electronic resources was the academic interest of the users.

The survey “How the Science doctoral students are searching electronic Information Resources: a case study of University Of Calicut” by Rekha Rani Varghese (2007)66 among 50 research scholars revealed that the science doctoral students in the University of Calicut are using various types of electronic
information resources related to their research and information resources are the
most widely used resources. Among the internet tools / resources, e-mail is the
most frequently used tool followed by on – line search. Majority of the science
doctoral students are unaware of the major search engines and they lack proper
knowledge regarding various advanced search methods. The study suggested to
provide proper guidance and training to the research community for using
e-resources.

The study “Use of e-resources among PG students of Kerala Agricultural
University” was reported by Sini and Ally (2007). The results revealed that most
of the respondents use internet than the library and most of them used Google as
the search engine for accessing information. Majority of the respondents search
e-resources one hour per day. The most preferred e-resources are e-book and
e-journals.

The survey “Awareness and use of digital resources in the libraries of
Isfahan University of Medical Sciences, Iran” by Asemi and Rivahiniya (2007) aims
to investigate the relationships between awareness and use of digital
resources among students in Isfahan University of Medical Sciences. A descriptive
method has been used and users of the medical libraries and information centers
affiliated to Isfahan University of Medical Sciences have been surveyed in the
research. A total of 250 students were selected randomly as a sample. A structured
questionnaire was designed for collecting data. The results of the survey were that
70% of students were aware of digital resources, but only 69% of them have used them; 62% were aware of offline databases, whereas only about 19% used them
through the Central Library LAN network. About 70% were aware of online
databases, accessible via the Central Library web site, and about 53 % of respondents have used them. A total of 64 % were aware of the “CLBJ Database”, while over half of them made use of it. In total 87 % of students felt that the available data resources met their information needs. Students had less use of offline databases, attributed to factors such as infrequent periodic orientation and lack of education on use of offline databases and fewer terminals connected to the server in the Central Library. Users are faced with problems like low speed connectivity and shortage of hardware facilities. When the user is aware of one resource, it will lead to more use of that resource. Isfahan University of Medical Sciences is aiming to develop new information centers and it needs to increase the extent of discovery of knowledge. On this basis, the paper has examined awareness, use and information retrieval of available digital resources and this will be of benefit to others in a similar position.

Shuling (2007) investigated and analyzed the current use of electronic resources in the library of Shanxi University of S and T. The major aim of the study was to find out the readers present condition, difficulties faced while using e-resources. The investigation target involves teachers, scientific staff, graduate students, undergraduate students and some training students from 15 institutes in the whole university. It centered on 7 subjects. In order to collect data, questionnaires were designed and sent to the target groups. The investigative results shown that nearly half of the readers investigated are satisfied with e-resources of the university. At present, the main way that readers obtained literature is from traditional library storage. This illustrated that the printed literature obtained important functions. The e-book does not substitute the
traditional printed book. The construction of library storage should advocate the printed one. Readers selecting the printed and e-book occupied the greatest majority.

A study in the use of electronic sources among agricultural scientists was conducted by Manohar (2007)\textsuperscript{70}. The study found that all the respondents have working knowledge of computers. More than 50% of them own a computer at their home and 32% have internet connection also. Majority of the respondents use internet every day. Majority of the agricultural scientists used net for literature search. Google, Yahoo and MSN were some of the most often used search engines. Most of the respondents were satisfied with the information got from internet. The majority of the participants preferred electronic media for literature search to print media. The frequency of use of CD-ROM database was less compared to internet.

According to Harley (2007)\textsuperscript{71} in a survey on the “use and users of digital resources: a survey explored scholars' attitudes about educational technology environments in the humanities” conducted on the researchers of the Humanities and Social Science in the University of California, Berkeley suggests a possible chasm between what productive and creative scholars say they need, on the one hand, and what many technological enthusiasts envision on the other. Indeed, "the lack of faculty willingness to change" is often cited as a key barrier to wider adoption of a variety of technologies in undergraduate teaching and other forms of scholarship. The study also focuses on the faculty behavior and attitudes of the researchers. This article draws on an in-depth study of humanities and social science faculty and their attitudes about use and non-use of digital resources in
teaching undergraduates. The purpose of the research was to map the universe of digital resources available to undergraduate educators in a subset of users in Humanities and Social Science and to examine how understanding use, users, and non-users might benefit the integration of these resources into scholarly environments.

The purpose of this article is to highlight the role of science repositories in the development of e-science. It aims to provide an overview of the open access collections currently operating in Spain. This paper is an examination of the tools, type of contents, coverage and aims of the digital research collections generated by Spanish academic bodies. There is only a limited development of institutional repositories, although it is possible to detect a growing tendency to create them. At the present moment, these digital collections seem principally to be seeking visibility for scientific output such as theses, journals, work in progress, preliminary results and other fringe or unconventional literature, without currently making use of academic teaching and learning materials relating to the cultural heritage. It would be desirable for government to become involved in encouraging open access within a new model for academic communication. It would appear crucial for the repositories aimed at spreading knowledge of scientific research to set in place mechanisms for rigorous peer assessment, so as to ensure the quality of the scholarly work deposited. This paper considers the role of science repositories in the development of e-science. The availability of resources for e-science, the need to support the compilation of repositories of information in electronic format and the access to digitized content is a matter of maximum priority for
any national science policy. Designing a new model for academic communication requires collaboration from the authorities, from universities, from librarians and also support from researchers themselves (Rodriguez, 2007).72

The purpose of this article is to identify two medical digital libraries from each of the following three countries: Canada, the USA and the UK. It aims to discuss strengths and weaknesses in system design in an effort to provide a basis on which to improve both the organization of, and the access to, electronic, scholarly information. Inclusion criteria for identifying the medical digital libraries were, those who had primarily text-based collections, intended for use by researchers or healthcare professionals were freely accessible, and fulfilled the author's definition of a digital library as opposed to an online database. To identify suitable medical digital libraries, the following resources were used: scholarly databases, online search engines, government and national library web sites, lists of online medical resources, and university web sites. Selection preference was given to those libraries with the most recent launch dates and service features. Each library was systematically evaluated, qualitatively and quantitatively, from the user's perspective in six distinct areas: administrative overview and site architecture, knowledge organization, results management, interaction with the collection, additional information services, usability, and personalization. The study finds that each digital library had a unique set of strengths and weaknesses. Each offered different services to help users identify relevant material and to quickly understand and assess their contents. This paper
contributes to the overall improvement of existing and future medical digital libraries. This is the first ever evaluation and comparison of freely available medical digital libraries from three countries (Ismond and Shiri, 2007).³³

The purpose of this study is to introduce a process for developing a metadata element set that will describe e-government resources in digital collections. The outcome of the process is a metadata schema that reuses as many elements as possible from existing specifications and standards termed as an e-government metadata application profile. The use of e-government metadata is to facilitate the electronic categorization and storage of governmental resources, as well as to enhance users' electronic interactions with the public sector. This study extends an initial process presented in the context of the European Standardization Committee CEN/ISSS, proposing four steps for developing the application profile: determine the resources to be described by the metadata; identify the stakeholder groups who will use the metadata; determine the use of metadata for each stakeholder group; and specify the metadata elements corresponding to each use. The combination of existing metadata schemas, in order to create an e-government application profile, requires a well-defined process for identifying the context requirements. This study presents such a process and reports its engagement in a real case study. It may serve as a roadmap for other interested researchers, managers or implementers of digital collections of e-government resources (Tambouris, 2007).³⁴

Chandrashekara, and Mullah. (2007)³⁵ have discussed that the electronic information resources have the effect of democratizing the
research community (RC). Researchers in the developing and developed countries can interact with each other on the same footing. The result is that the RC seems to moving towards a greater international homogeneity. However in developing countries like India the engineering research community (ERC) is not fully utilizing the benefit of the situation because they consider online tectonic information resources as a disorganized unmanaged monster, without a way to verify on-line information and without more than elementary search tools. In an electronic environment the studies which focus on how the researchers search information on the type and source of information needed. On the nature of information sought and reshaping their information support activities. The present study attempts to assess the information search pattern of ERC in the electronic environment in the engineer colleges of Karnataka.

Bansode and Pujar (2008)\textsuperscript{76} conducted a study to understand the purposes of use of internet, methods of locating information and search techniques used in retrieving the information by the research scholars of Shivaji University, Kolhapur. This study found that research scholars use internet for their research and communication purposes. It concluded that more awareness about internet resources and training in the use of the same needs to be provided by library professionals.

Biradar and Sampath (2008)\textsuperscript{77} studied the different search engines used, frequency of use of search engines, factors that influence the use of search engines and the search strategy used by research scholars and faculty members in the
development of Physics in 6 universities of Karnataka State. The study showed that majority of the respondents (84.33%) used search engines to retrieve information on the internet and most frequently used search engines are Google (72.85%) and Yahoo (53.57%)

Biradar, et al., (2008)\textsuperscript{78} in their study explored university students and teachers perceptions regarding their use of search engines for retrieval of scholarly information. The study was conducted among teachers and students of Kuvempu University. The study also examined the factors that influenced the use of search engines, search strategy for information retrieval and the methods by which students and teachers learn skills for searching. The study observed that 100% of students and 97.9% of teachers used search engines for information retrieval. Google and Yahoo received the highest overall ratings. It also revealed that majority of respondents took help from their funds and help option of search engines to develop the skill for searching.

Kanniyappan, et al., (2008)\textsuperscript{79} in the article “Use and impact of e-resources in an academic and research environment: case study” described briefly a survey conducted at Anna University library, Chennai to find out the use of different types of electronic resources and services and their impact on the academic development of faculty members. Also, the study discussed the problems faced in using the electronic resource and the satisfaction of users in getting the required information. Analysis of 150 filled questionnaires from the different categories of teaching community revealed that all the respondents used computers / on-line services and majority of them used e-journals and internet /www for their research and study purposes. The majority of the respondents felt that printed jomual will not become
obsolete in the near future and most of the faculty members were aware of the availability of e-resources.

Rekha Rani Varghese (2008) conducted the study that dealt with the pattern of use of digital information sources by the doctoral scholars in Bioscience fields in 5 universities in Kerala. It was observed that the scholars make extensive use of CD/DVD databases, electronic journals and other web based resources for scholarly information. About 98% of the scholars were regular users of on-line databases and e-journals. Majority of respondents made use of almost all the tools and services in the internet. Yahoo and Google were the most preferred search engines. Majority of the scholars were not aware of meta search engines. Though Boolean operators were used while using search engines, advanced search options were not familiar to them. The findings substantiated the need for libraries and information managers to provide proper guidance and training to the scientific community to make effective use of the digital resources.

Chinnasamy, et al., (2008) made a survey on the use of electronic resource by management students of Jansons school of Business, Coimbatore. They also studied the impact of electronic resources on the academic work. The study reported that the students used electronic resources for academic purposes and the frequency of use was very high.

Sujatha and Mudhol (2008) in a study examined the use of electronic information sources by the teachers/ scientists, research scholars and post graduate students in the college of fisheries, Mangalore. The study was aimed to find the frequency and purposes of use of electronic resources, frequently used e-resources, methods of acquiring skills to use e-resources, constraints of using e-resources and
the satisfaction level of users. It was observed that the respondents perceived ability to use the computer was quite high and majority of the respondents (71.5%) have more than 3 years of experience in using e-resources. Fairly good number of respondents used e-resources at computer room, at home and at internet café. E-mail was the most frequently used net based service. 79% of respondents used subject specific web sites. 60.5% used CD-ROM databases. It was observed that 76.5% of respondents acquired the skill of using e-resources with the assistance of colleagues / friends. Retrieval of irrelevant information, slow access and poor skills were the major problems in using e-resources.

Vakkari (2008) in a study explored how the use of electronic information resources had influenced scholars opinion of their work and how this was connected to their publication productivity. The data consisted of a nationwide web-based survey of the end-users of FinElib, the Finnish Electronic Library, at all Universities in Finland. Scholars felt that the use of electronic literature had improved their work considerably in several ways. This influence could be differentiated into 2 dimensions. The first one was improved accessibility and availability of literature, and the 2nd was more directly related to the content and quality of scholarly work. The perceived improved access was positively associated with the number of international publications produced among doctoral students in particular. The more direct influence of e-resources use on the content of scholarly work was however, not associated with publication productivity. The results seemed to imply that investments in academic digital libraries were beneficial for researchers and for the universities.
According to Maron and Smith (2008)\textsuperscript{84}, Association of Research Libraries (ARL) given the wealth of digital scholarship created and disseminated independently by scholars, research teams, associations, and other entities. The Association of Research Libraries (ARL) wanted to explore the variety of online resources currently in use by the scholarly community. In spring 2008, ARL engaged Ithaka to help survey the broader landscape of these resources, to understand more about the resources that exist, and to highlight particular examples of innovation. Using a variety of examples that emerged through this investigation, the report describes some of the ways in which scholarly communication is occurring in a digital world.

The networked digital environment has enabled the creation of many new kinds of works that are accessible to end users directly, and many of these resources have become essential tools for scholars conducting research, building scholarly networks, and disseminating their ideas and work. The decentralized distribution of these new model works can make it difficult to fully appreciate their scope and number, even for university librarians tasked with knowing about valuable resources across the disciplines. In the spring of 2008, ARL engaged Ithaka to conduct an investigation into the range of online resources valued by scholars, paying special attention to those projects that are pushing beyond the boundaries of traditional formats and are considered innovative by the faculty who use them (www.ithaka.org)\textsuperscript{85}.

A field team of librarians at ARL institutions in the US and Canada was assembled to interview faculty members on their campuses about the digital
scholarly resources they find useful in their work. The field team of 301 librarians at 46 institutions interviewed professors about the digital resources they use. Ithaka staff then evaluated each resource to ensure that it met ARL’s definition of “original and scholarly works,” those resources containing born-digital content by and for a scholarly audience. Of the 358 responses the field team gathered, 206 unique digital resources met these criteria. These resources are included in a publicly-accessible database. This qualitative approach, while not statistically meaningful, yielded a rich cross-section of what innovation in digital scholarly resources looks like today. The final report is based on both the fact-checked results of the field study and interviews. The final report identifies eight principal types of digital scholarly resources: E-only journals, Reviews, Preprints and working papers, Encyclopedias, dictionaries, and annotated, content data, blogs, discussion forums and professional and scholarly hubs. (http://www.arl.org/sc/models/model-pubs/search-form.shtml, 2008).86

Between April 1 and June 17, 2008, field team members conducted interviews with faculty members to ask them about the on-line resources they use that contain original scholarly work. The faculty members were encouraged to offer as many examples as they felt were relevant. For each resource cited, the field team member asked a set of questions including how the scholar uses the resource, his opinion on how the resource accomplishes something innovative, and how often he uses it. In addition, field team members asked a series of questions relating to the resource, including its method of selecting content and business model. In some cases, faculty members knew this information. When they did not, field team members conducted follow-up research about the sites after the
interviews to verify factual information and to fill in answers to questions that the faculty member could not answer. Finally, field team members entered this information into a Form spring database set up by ARL. The field study conversations yielded 358 responses. Three of these were from interviews with scholars who said they used no digital resources at all. The Ithaka team then reviewed each suggested resource to determine if it met the agreed-upon definition of a new digital scholarly resource. About two-thirds of all responses – 240 resources – met the requirement of containing some original scholarly content (www.ithaka.org, 2008)\textsuperscript{87}.

H-France is not a “new” resource - it was founded in 1991 and has had a long history of connecting scholars in its discipline. The list was originally started with a small group of scholars so “that the types of conversations that occurred around the coffee machine [at Parisian archives] would occur online,” according to H-France’s Editor-in-Chief. Today, it boasts a subscriber list of over 2,300 scholars of French culture and history. While newer forms of online discussion are available today – chat and instant messaging, real-time forums and discussion boards – the list served has remained a mainstay of scholarly communication, allowing slightly more formalized communication than other, newer methods. Restricted access, list moderation, and list archiving are some elements that lend a greater sense of credibility and enduring value to the exchanges of ideas and information via the lists. H-France spends a few hundred dollars per year on Web site hosting, and is able to cover these costs from small grants and member donations. (www.ithaka.org)\textsuperscript{88}.
Veeranjeyulu and Ramesh (2008) in their article “Migration of user of community from on-line to CD-ROM for cost effective benefits” argued that user community had migrated from on-line search to CD-ROM because of the advantages of using CD-ROM when compared to on-line search such as cost effectiveness and reliability. They briefly discussed the anticipated future developments in these directions. Results generated from the studies undertaken in the area of use of CD-ROM databases are detailed below. General user opinion towards the use of electronic resources in particular CD-ROM had been positive, with students enjoying using these sources and finding relatively few problems while using them.

Traditionally, humanities scholars have worked in physical environments and with physical artifacts. Libraries are familiar places, built on cultural traditions over thousands of years, and books are comfortable research companions. Digital tools are a more recent addition to the resources available to researcher. This paper explores both the physical and the digital qualities of modern humanities research, drawing on existing literature and presenting a study of humanities scholars' perceptions of the research resources they use. We highlight aspects of the physical and digital that can facilitate or hinder the researcher, focusing on three themes that emerge from the data (i) the working environment (ii) the experience of finding resources and (iii) the experience of working with documents. Rather than aiming to replace physical texts and libraries by digital surrogates, providers need to recognize the complementary roles they play: digital information environments have the potential to provide improved access and analysis.
features and the facility to exploit the library from any place, while the physical library and resources provide greater authenticity, trustworthiness and the demand to be in a particular place with important material properties (Rimmer, 2008)\(^9\).

A digital repository seeks to collect both faculty and student intellectual output in digital form. Faculty using a digital repository could have more than a simple curriculum vitae but a digital collection of published and unpublished material that other researchers could actually search, browse, and read. As repositories are normally set up using an open-access model, the audience for faculty scholarship could extend to every person with a connection to the internet. This provides an extraordinary opportunity for various significant scholarly exchanges with scholars that teach in international contexts or have limited library resources. Likewise, a digital repository provides a greater exposure to student work. Obtaining a dissertation or thesis submitted to another institution can be both difficult and expensive. By having student theses and dissertations in an open digital repository, the bibliographical, research, and intellectual work is then easily available for use by students and researchers at other institutions (Keck, 2008)\(^9\).

This article presents the initial findings of a research project studying the evaluation of digital periodicals in the French university network in terms of use. The results show early trends in patterns of use by researchers in university libraries. They indicate a significant, albeit contrasting, progression of e-resource use by sector. The key factor is the availability of e-resources,
favoring libraries with the most complete sets of resources, particularly in science, technical subjects, and medicine. At the same time, cost analysis demonstrates that use remains insufficient in terms of the investments involved (Boukacem-Zeghmouri and Kamga, 2008).  

Alwarammal (2008) has studied that seeks to examine the usage of digital resources by the faculty of engineering at Kalasalingam University (KLU) the survey reveals that majority (85.36%) of the faculty is aware of the utility value of the students. Form this survey. The investigator is able to find out that most *76.82% of the faculty members of the engineering departments prefer electronic journals (full txt articles) as the first source of information for their teaching and research however, the study also revealed about the less awareness of the faculty members about the e-mail alert service. The reading preferences of format files (such as PDF as well as HTML) are also discussed.

Devalingam. and Satyaram (2008) have evaluates the use of Jayam College of Engineering and Technology (JCET) College Library in Dharmapuri Tamilnadu. A survey of 73 faculty members is conducted through or questionnaire. The analysis of the collected data covers the use of electronic resources and how the electronic resources are improving the academic careers of the faculty and also what are the problems that are faced in using the electronic resources. This concludes that the main intention of the use of electronic resources has been the academic internets of the users.
Dhanavendan, et al. (2009)\textsuperscript{95} have studied the use of digital library resources by the engineering professionals in the engineering colleges at cuddalore district. From the study it is concluded that majority of the staff using digital resources to collect general knowledge and 31.20\% of the students used for communication purpose. The results showed that majority of them have felt that digital information awareness his adequate and 50\% of the respondents satisfied with digital resources.

In a study presented by Harle (2009)\textsuperscript{96} draws on a literature review undertaken by the ACU (Association of Commonwealth Universities), as part of a study commissioned by Arcadia on the obstacles to accessing and using digital scholarly information in African universities. It outlines the principal issues which have been identified through existing programs, studies and reviews, and summarizes existing initiatives in this area. In doing so, it highlights a number of areas to be explored in greater depth during the subsequent phases of the project.

Patil and Parameshwar (2009)\textsuperscript{97} conducted a study on the use of electronic resources by the faculty members and research scholars in the Gulbarga University, Gulbarga. The data for the study was collected through a questionnaire and analyzed to understand the information needs of the faculty members and research scholars in various post graduate departments in the university. The study revealed that the electronic resources available in the Gulbarga University library were very much helpful in fulfilling their information needs. It was found that necessary training must be given to the teachers and research scholars in using electronic resources.
This study presents the results of a survey conducted in 2005-2006 regarding the extent of use of digital resources by students and researchers in five universities in Israel and the ratio of use between authorized electronic information resources provided by academic libraries, and the Surface Web. About 80% of respondents reported a high or very high frequency of use of the Surface Web for seeking information for their study or research. In contrast, only about 28 percent of the respondents reported high or very high use of academic e-journals, 40 percent high or very high use of digital databases, and only about 13 percent high or very high use of e-books. A situation in which academics use the Surface Web two or three times more frequently than more authoritative digital information sources provided by their library indicates a severe problem related to the quality of information used, which may severely harm the quality and credibility of research based upon it. The survey findings are worrying since much Surface Web information is not reliable or authoritative. The current research does not indicate what causes students and researchers to depend so heavily on Surface Web information for their research, but it is reasonable to assume that it derives mainly from the ease and convenience of using internet search engines (Ben, 2009)\(^8\).

The fast growth of ICT and particularly the internet has changed the traditional methods of research, storage, retrieval and communication of scholarly information. Now-a-days digital resources have emerged as the most powerful medium for storage and retrieval of information. In the electronic environment, libraries need to recognize that they are not the only one in
distributing knowledge. The 24 hour online bookshops can provide reference services as well as information to the global information users. This study concludes that Library and Information Science professionals should be well aware of the digital resources available in the concerned field of study and evaluate these before subscribing these for their library users (Saratha, 2011)\textsuperscript{99}.

In the study “Use of Digital Resources by Faculty and Research Scholars of Manonmaniam Sundaranar University, Tirunelveli”, Thanuskodi and Ravi (2011)\textsuperscript{100} observes that: (1) Most of the faculty members and research scholars (67.14 per cent) were familiar with the use of digital resources. (2) About 32.14 per cent of the faculty members and research scholars were availing the digital library thrice in a week. (3) Majority of the faculty members and research scholars (64.28 per cent) were using digital resources for research purpose. (4) Majority of the faculty members and research scholars (65.71 per cent) were learned the required skills for the usage of digital resources through ‘self study’. (5) Majority of the faculty members and research scholars (55.71 per cent) felt that the information available in the digital resources is always ‘adequate’. (6) A large majority of the respondents were of the opinion that the digital resources can never replace the printed resources.

Ross, et al., (2011)\textsuperscript{101} in a study aims to investigate the use of Twitter by an academic community in various conference settings, and to pose the following questions: Does the use of a Twitter-enabled backchannel enhance the conference experience, collaboration and the co-construction of knowledge? And how is micro
blogging used within academic conferences, and can one articulates the benefits it may bring to a discipline? This paper considers the use of Twitter as a digital backchannel by the Digital Humanities community, taking as its focus postings to Twitter during three different international 2009 conferences. The resulting archive of 4,574 "Tweets" was analyzed using various quantitative and qualitative methods, including a qualitative categorization of Twitter posts by open coded analysis, a quantitative examination of user conventions, and text analysis tools. Prominent Tweeters were identified and a small qualitative survey was undertaken to ascertain individuals' attitudes towards a Twitter-enabled backchannel. The findings are: Conference hashtagged Twitter activity does not constitute a single distributed conversation, but rather multiple monologues with a few intermittent, discontinuous, loosely joined dialogues between users. The digital backchannel constitutes a multidirectional complex space in which the users make notes, share resources, hold discussions and ask questions as well as establishing a clear individual on-line presence. The use of Twitter as a conference platform enables the community to expand communication and participation in events amongst its members. The analysis revealed the close-knit nature of the Digital Humanities researcher community, which may be somewhat intimidating for those new to the field or conference.

Transcribe Bentham is testing the feasibility of outsourcing the work of manuscript transcription to members of the public. UCL Library Services holds 60,000 folios of manuscripts of the philosopher and jurist Jeremy Bentham (1748-1832). Transcribe Bentham will digitize 12,500 Bentham folios, and, through a wiki-based interface, allow volunteer transcribers to
take temporary ownership of manuscript images and to create TEI-encoded transcription text for final approval by UCL experts. The project makes innovative use of traditional library material. It will stimulate public engagement with UCL’s scholarly archive collections and the challenges of paleography and manuscript transcription; it will raise the profile of the work and thought of Jeremy Bentham; and it will create new digital resources for future use by professional researchers. Towards the end of the project, the transcription tool will be made available to other projects and services (Moyle, 2011).

This study has three main objectives: i) to describe the use patterns of electronic and traditional resources in Portuguese academic libraries; ii) to estimate the value of the Portuguese electronic scientific information consortium b-on by using two alternative valuation methodologies; iii) to relate the use patterns with the valuation of b-on. We estimate the value of the Portuguese electronic scientific information consortium b-on by using two alternative evaluation methodologies: a) the value of the time saved by using this electronic resource; and b) the contingent valuation method to estimate how much the user is willing to pay for the service. The results show wide differences in use patterns, with professors, researchers and Ph.D. students having a more intense use of digital library services than undergraduate and masters students. Moreover, the benefit-cost ratios computed using the two valuation techniques indicate that the value of the electronic scientific information consortium b-on is well above its costs. Finally, the study shows
that the valuation of b-on is higher for the user groups with higher percentage
use of digital services (Baptista and Pacheco, 2011)\textsuperscript{103}.

This study attempts to explain the wide dissemination of Library of Congress Subject Headings (LCSH) within digital libraries and presents some of the advantages and disadvantages of using this controlled vocabulary in digital collections. The study also presents other classifications used in digital collections for subject access and explores ways of improving search functionality in digital collections that employ LCSH. The number of digital collections increases every year and LCSH is still the most popular choice of controlled vocabulary for subject access. Of the numerous criticisms, difficulties of use and user unfamiliarity are the greatest disadvantages of using LCSH for subject access. Average users only have a vague notion of what they are looking for when initializing a search. More work is required in automated generation of subject headings and increased usage of LCSH in faceted search retrieval systems. This will provide users with better access to the LCSH used in the back end of information retrieval (Walsh, 2011)\textsuperscript{104}.

Vijayakumar (2012)\textsuperscript{105} in a study analyzed the use of digital resources in his book “Digital resources in information science environment”. The major findings were (1) for using electronic information resources, training and help were needed but 63% students said that they were not getting any help or training from their library for using the internet and electronic information sources. This shows that an urgent training programme is essential for the college students for the use of modern electronic information resources (2) an average of 72% students said
that the electronic information resources available in their college library and through online, support their academic activities (3) a total of 57.50% students gave more preference to the e-sources when compared to the conventional printed books, only 26.5% gave preference to the conventional printed books (4) the number of college students, that is, 69% admitted that the electronic resources were not badly affecting their reading habits when compared to the conventional books or print medium but actually supported (5) a majority of the students, (82%) said that the value of electronic resources for their study and research was high.

The aim of this study is to present the effect of electronic resources on the Humanities and to discuss the role of the library in the changing environment of resource provision and access. A number of recently published works are reviewed in order to give an insight into the information-seeking habits of humanities researchers, the extent to which they use electronic information resources and their attitudes towards them. The major publishers and distributors are listed, with information summarizing their offerings, followed by a highly-selective listing of humanities resources arranged by subject. In addition, the authors pose some of the problems surrounding decisions about resource selection and call the attention of librarians to the issues they must consider (http://www.southernlibrarianship.icaap.org)\(^\text{106}\).

Santosh et al., (2012)\(^\text{107}\) in a study examine the existence of various e-resources, awareness about e-resources, preference to e-resources, assess points of e-resources problems faced while accessing the e-resources and purpose of
e-resources usage in Bharatidhasan University by teachers, students and research scholars.

Baskaran (2012) examined the faculty members and research scholars who visit the library for accessing e-journals from UGC-Infonet consortium. It has been analyzed the information usage pattern and needs of the respective users; a survey was conducted among faculty and research scholars in Alagappa University. The population included in the study comprised 120 respondents from Arts, Science, Management and Education departments and of that, faculty is 45 and 58 are research scholars. This study reveals that most of faculty members are access to e-journals at weekly 24 (44%). The faculty members and research scholars aware about UGC-Infonet accounted 103 (85.99%) and 17 (14.16) respondents are not aware of this programme. The study observed that the faculty members who responded to the study, 70 (59.1%) learned through guidance from their teachers/guides 28 (56%). It provides the highest proportion of faculty members 21 (42%) use their department for accessing the information, while research scholars 28 (40%) they were accessing their e-journals in their department itself.

Hans (2012) assess the level of awareness and use of web resources by the research scholars of languages and literature in Aligarh Muslim University, India. Further the study aims to highlight the problems faced by research scholars while accessing web resources, their opinion about the features and usefulness of the e-resources. The study was conducted through a well structured questionnaire administered among the research scholars in the department of English, Hindi, Arabic, Urdu, Persian, Modern Indian Languages and Comparative literature and
Culture. A random sample of 250 respondents collected during the months of June to August 2011 has been taken for analysis. This study restricts the study exclusively to use of web resources by research scholars of Language and Literature in Aligarh Muslim University. The scope of the study can be extended to other Indian Universities also. The study reveals that web resources have became an essential part of the research works in AMU. Almost all the services and resources available on Web are utilized by the researchers and Google is the widely used search engine in the University. Many attempts have been made to study the use of e-resources by research scholars in various universities in India, but this is the first of its kind among the researchers of Language and Literature with some suggestions for improvement of web resources and services.

The study of Bhukuvhani, et al., (2012)\textsuperscript{10} aims to reference an investigation of 30 lecturers’ use of electronic resources in an effort to uncover correlations between library information literacy training and increased use of Web based resources, increased use of Web resources and improved pedagogy as well as increased use of web resources and higher publication rates. Lecturers use various electronic resources at different frequencies. The university library’s information literacy skills, workshops and seminars are the main sources of knowledge of accessing electronic resources. The use of electronic resources can be said to have positively affected lecturers’ pedagogical practices and their work in general. Results of the study indicated that lecturers attended the Electronic Information Resources Skills Training and that they (86.7\%) used at least one or more electronic information resources to find information for use for their teaching and research. 13.3\% lecturers indicated non-usage of electronic information
sources. Most of the lecturers (53.3%) indicated that they learnt about electronic resources through the workshops and seminars. The majority of the lecturers were motivated (motivated=86.7%; 66.7%=very motivated and 20%= somewhat motivated) to learn how to use electronic resources. Lecturers mostly got information for their research papers through the internet (83.3%) and 10% through electronic resources. The use of electronic information resources by lecturers proved to have positively affected their work as evidenced by the results. However, there is need to mount more and frequent electronic information resources training workshops.

The study of Nagarajan, et al., (2012)\textsuperscript{11} aimed to identify how electronic information resources are utilized by academic library users and specific trends that can be seen among faculties and students. Further, the study also examines the use pattern, acceptance, perceived importance and satisfaction on electronic resources over print resources. The digital resources available in a library play prominent role in facilitating access to the required information to the user are an expediency manner. The major findings are students are leading users of e-resources in terms of respondents i.e., 77% of students and 23 % of faculty members. Majority of the users (42%) indicated that they preferred print version of resources for their convenience i.e., 36% of users from the Computer Science and Information Technology. It is higher than others. In the aspect of frequency of visit, 29 % of users visits library at weekly once and 7% of users rarely visits library. Of the total, 113 users are aware of facilities and services of digital library and make use of it. 30% users visits digital library at weekly once and make use of it. Only 12% of the respondents use e-resources rarely. A total of only 24
respondents indicated that they have at least 2 years experience in using e-resources, an indicator that the concept of e-journals is still fairly new phenomenon. Most (45%) of the students using the e-resources for studying and 18.6% of users for updating the knowledge. Half of the users (55%) preferred electronic journals and e-books. It is higher than the other types of resources. And 28% of respondents preferred CDs/DVDs. The highest percentage (34%) of the users access the JEL online. Only 8 respondents felt that poor collection of resources available in digital library. The problems encountered by the users are measured, 31% of the respondents rated that downloading is a major problem. Also 26% of the users said that lack of knowledge is another major problem. Majority (66%) of the respondents satisfied with the e-resources available in the library. They are giving more importance to electronic version of documents.

Hopkins and Summers-Ables (2013)¹¹² conducted a study in academic medical libraries and examines that electronic resources is integral to the functioning of libraries. Existing research has shown that management and usage data on e-resources is complicated. In addition, the cost of e-resources is going up disproportionately to budgets as reported by the Association of Research Libraries. With the growing number of disparate e-resources, along with the increasingly challenging budget scenarios many libraries face, a thorough and concerted effort is necessary to inform libraries of their options. This study examines methods for collecting data on the use of e-resources in an academic medical library and how that information can affect decision making. Approaches for collecting data are discussed, with emphasis on consistent and reliable methods. Data are discussed in aggregate and detail, and findings are discussed to highlight trends. Finally,
implications to library policy and practice are considered in an effort to improve use and use of e-resources.

Pardeep, et al., (2013)\textsuperscript{113} in a study examine the extent to which research scholars of universities are aware about e-resources and make use of them. Research is an important activity for the development of scientific and technical knowledge. E-resources are part of the “Invisible Web” which is essentially information accessible through the Internet but normally can’t be found on Google. Most E-resources are not freely available to everyone on the World Wide Web and they may not appear on search engines like Google. An e-resource can be e-book, journal or newspaper that has been made available in electronic format and it can be a bibliographic or full text database that allows us to search for relevant articles in our subject area. However a number of e resources are available, but as per the study e-journal, e-book, CD-ROM and e-newspaper are most widely used. Electronic journals also known as e-journals, e-journals and electronic serials, are scholarly journals that can be accessed using computer and communication technology.

The study of Anam et al., (2013)\textsuperscript{114} examined the use of electronic resources among academic scholars of the Islamia University of Bahawalpur, Pakistan. A quantitative survey was found most convenient and useful for this study. The total population of the study was 169 research students in IUB. The response rate was 79% and 133 utilizable responses were coded and analyzed by using SPSS software. Results of the study showed that most of the researchers (61%) used electronic resources daily for many purposes and reasons. Most of them (57%) were ‘satisfied’ with the usage of electronic resources. Leaming,
education and research were the main purposes, and easy use and easy access to documents were the major reasons of using these resources. Lack of internet connection is the major problem faced by the respondents.

Electronic information resources play an important role in teaching and learning process at university level and provide superior assistance to its users. Sivathaasan and Velnampy (2013)\textsuperscript{115} in a study identify the impact of usage of e-resources on academic performance of the university teachers and this study was limited to the university teachers, working at the University of Jaffna, Sri Lanka. Stratified random sampling technique was adopted to select a sample from each of the five different faculties in proportion to the actual size of the group in the total population. The study employs correlation and regression model to test the operational hypotheses and results revealed that usage of e-resources has a strong positive association with academic performance ($r = 0.623$, $p < 0.01$). Multiple regression analysis showed that the usage of e-resources has an impact on academic performance at the rate of 38.8 $\%$ ($R^2 = 0.388$), which is statistically significant at the levels of 0.01 ($p < 0.01$). This study would absolutely benefit the research scholars through exploring impact of usage of e-resources on academic performance.

2.1 Conclusion

The review of related studies shows that there were many studies on various aspects of the use of electronic sources. Majority of the studies were conducted in developed countries. The situation in developing countries and under developed countries is not yet studied in detail. The review also exposed the need
for such studies among academic audience especially research scholars in the Universities. Totally, the investigator has quoted 115 reviews. Out of the total 115 reviews, 47 reviews are based on national studies, 29 are based on international studies, 21 are carried out from journals, and 18 are carried out from websites. The collection of literature study had helped to carry out the study to a great level to a certain extent.
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