CHAPTER 2
REVIEW OF RELATED LITERATURE

The literature review is an investigation of progress in a particular area of a subject over a given time period. It is a depiction of what has been published on the topic of research by attributing scholars and researchers bring to light the important literature and contributions of the current study. It is an evaluative study of the literature related to the topic of research and helps in determining the nature of the research by describing, evaluating and summarizing the literature. It provides theoretical overview of the literature to articulate the relationships between the literature and the field of research. According to Kumar (2012), it presents theoretical background to the current study by creating links between what has already been studied and what need to be examined, and to contextualize the findings by comparing them with other studies in relation to the area of investigation. Thus, it facilitates a researcher to show how the findings of the study will contribute to the existing body of knowledge in their profession.

A good literature review is a foundation of both hypothetical and practical complexity of any research and improves the quality and usefulness of subsequent researches. Thus, it aids a reader to identify all the relevant concepts related to the research, such as what knowledge and ideas have been drawn to the topic, problems and issues related to the topic. According to Boote and Beile (2005) a good literature review must possess the following characteristics; it should achieve a number of objectives of the research, set a background for the study, help in defining the scope of the investigation, and validate those decisions in the light of other studies. Moreover, it should also examine the research methods used in other studies for gaining better understanding of the selected methods for the study. A literature review includes identification of relevant published literature or sources of relevant information that may range from a bibliographical index or references, to a review of original publications on the area of research.

The literature review is an overall analysis of the literature that helps a researcher in identifying and leading towards a new productive work by analysing the most commonly discussed criteria and issues used in related studies. It helps researchers to subdivide the topic in more understandable parts and to make the
research more comprehensive and understandable. The researcher carried out the literature survey to know developments of online databases, its practices, and other issues related to the use of online databases. Besides, reading the literature assists the researcher to bring to light the important issues and variables that will have an impact on the research outcomes. The literature review is organised into different facets that were found to be relevant and helpful in understanding the current study and these are discussed below under the following headings.

2.1. INFORMATION RETRIEVAL SYSTEMS

Information retrieval system is one of the outcomes of information retrieval technologies, which is used for searching through a collection of electronic or print documents to satisfy the information needs of users. It is concerned with the storage, organization and searching of collections of information. The goal of any IR (Information retrieval) system is to select an informational item from a large collection of information item that should be relevant for a information seeker (Swanson, 2010). It performs all the activities related to the organization, processing, and access of information in all forms and formats. Furthermore, it allows people to communicate with an information system or service in order to find information, which is relevant to fulfill their specific needs of information (Chowdhary, 2010). The history of information retrieval systems is related to the development of computer technologies. Prior to the 1940s, the information retrieval systems were manual in nature, such as indexes and catalogues in print form. In the 1950s, the first computer based retrieval system was introduced, then in 1950s the punched card system was came out. In the 1960s, the major off-line information systems were introduced that worked on both batch-processing and tape-oriented mode. This was recognised as an era of off-line computer retrieval systems. In 1963 the experimental work on on-line information retrieval had been started and the period of 1970s was called as an epoch of online information retrieval systems, where the extensive conversion of operations had been done from offline to online mode. Today’s online retrieval systems are heuristic and interactive in nature, permit browsing, provides quick response. These work on real time and time-shared modes and can be used in a non-delegated searching mode (“Online information system”, 1977). IR systems are logical and organized set of elements, which produce, distribute, or process information collectively. The term IR systems can apply to computer information systems, networked information systems and other related systems (Ratzan, 2009).
Due to the unabashed growth of proportion of knowledge, there have emerged a number of information systems or databases, which are excellent tools for information communication and retrieval. As well as, the progress and developments in information, communication and computer technologies (ICTs) resulted in several new electronic sources of information and made these systems available online to each and every one globally through computerized networks, viz., internet (Devrajan & Pulikutheil, 2011). However, gaining knowledge and expertise in using electronic resources enables researchers to access current information to increase the efficiency and productivity of their research work (Saado, 2004).

2.2. ONLINE DATABASES

Chowdury (2010) categorized the online information retrieval systems into four distinct group categories on the basis of their content, purposes and functions. These categories are as follows; Digital libraries and Web-based information services, OPACs, Online databases and Web search engines. With the increasing use of computers in information management activities, there have emerged a number of databases, which provide bibliographic information of various sources. Generally, the online databases include references to journal articles, conference papers, reports, books, etc., and make available these sources through Information Retrieval Services (IRS) or hosts on commercial basis. Some of the online information retrieval services like, Dialog, Ovid and Factiva, provide access to different types of databases to concerned parties. Gash (2000) added that, the developments in networking technology and in national and international telecommunication technology enabled the real-time, interactive, online access to online databases at a large extent to the users lying worldwide. Since then, these databases have become a prime source in information searching by providing access to a wide range of information. It provides millions of systematically organized references of different documents and access to various scholarly journals, books, reports, patents, standards, thesis and dissertations and government publications, etc.

Computerized database are an outcome of the application of computer technology to education and research. These are continuously gaining attention because of their potential of developing skills in logical thinking, problem solving, and information handling. These are unique tool for integrating teaching knowledge with information skills, and intellectual skills. By searching databases, a student also learns to identify the information needs, to make problem statements, to retrieve and
sort information, and to design strategies for organizing data (Parisi, 1985). An academic database is one of the best sources of information to the academic community. It is an excellent tool for information retrieval, referencing and sharing of data as well. These are appreciated mostly for its authenticity and excellence in information communication and retrieval (Uwimana & Melius, 2010). Online bibliographic databases are the excellent tools of information access, rather than a mere item of any library’s collection. These provide quick and better access to those published items of information that a library might or might not have in its collection. (Rice, 1985). In print databases, there is a limit to include an only specific subject heading, but in computerized systems, a single document can be covered under different subject headings. Within a minimum search time, these databases facilitate compilation of bibliographies, current awareness services and retrospective literature search. Today there are different types of databases available and their trend and number are continuously increasing. These are either having general coverage or are subject oriented having specialty in any area of education, viz. Chemistry and Chemical technology, Biological sciences, Agricultural science and Nuclear science, etc. (Devrajan & Pulikutheil, 2011). These databases generally comprise of periodical articles, government document, conference papers, and other material, scholarly material and are usually distributed to libraries by professional vendors. The three major vendors: DIALOG information services, Inc. (DIALOG), Retrieval Services (BRS) and System Development Corporation (SDC) are the prominent names in database industry that provide a wide range of online databases all over the world (Reichel, 1983).

2.2.1. Awareness of Online Databases

Like accessibility, awareness also plays an important role in the prolific use of electronic resources. With proper awareness of available electronic resources, users can become well acquainted with available sources and current trends and developments in their respective fields of study (Negahban & Talawar, 2009). According to Piotrowski, Perdue and Armstrong (2005); Kaur and Verma (2009) the proper awareness of available e-resources enables users to use more and more those resources that are beneficial for their study and research. Inspite of this, it also helps users to hold constructive attitudes towards the limitations faced by them while using the computer-based databases or online library systems. In the study, De Groote and Dorsch (2003) found that awareness and convenience are the two factors that play a
major role in selection and use of online resources. Lack of awareness was found as one of the reasons of low usage of databases. Due to unawareness users preferred to use only those databases with which they were well-acquainted and used regularly, despite of other available databases. Thus, the lack of knowledge deterred the users to make use of all the online databases subscribed by the library. In the absence of or insufficient information on coverage and contents of available databases only of a limited number of databases were used by the users. As libraries offer many online information resources, so the library staff should take measures to make its users aware of all the available online resources and educate them of their importance and scope in their area of study (Upadhyay & Chakraborty, 2008; Punchihewa & Jayasuriya, 2008 and Groote, 2003). In a study, Atakan (2008) evaluated the results of two surveys that were carried out in the years 2002 and 2005 to assess users’ awareness regarding availability and value of databases. During the study period, an increase in the level of awareness and use of online databases was specifically noticed. In the first survey, the users rated use of online databases as occasionally, while in the second survey they kept it under the category of frequently. This change may have occurred due to an increase in users’ awareness and interest towards the electronic resources. Thus, this affirmed that the awareness and promotional programs conducted for the three consecutive years from 2002 to 2005 had left a positive and remarkable impact on the use of electronic databases. The online databases, ScienceDirect, Web of Science and EbscoHost were being appreciated and used more for research work. In this regard, Weingart and Anderson (2000) suggested that libraries should take requisite measures to promote and publicize their available electronic resources and make appropriate arrangements for their proper accessibility and full utilization by its users.

Furthermore, there are number of studies that made recommendations on improving the awareness and use of online resources. In a study, Soyizwapi (2005) found that students did not have much knowledge about formal means of information, amongst them friends were seen as a prominent information medium, followed by library orientation programs, lectures library website, and then library guides and library staff. Thus, the study recommends for enhancing users’ awareness and knowledge regarding available databases through organizing awareness campaigns at the beginning of the academic and at regular intervals during the semester. It also suggested that libraries should combine different approaches of training, i.e.
demonstrations, educational meets, and workshops with each other for better communication of knowledge about library’s resources. There need for online tutorials on systematic procedures for using of online resources was also identified. Novak and et.al., (2010) also realized the need for educating users about databases and its usefulness and for devising strategies for promoting database use in developing countries. The level of awareness was seemed low among the physicians in Croatia regarding extracting journals, review publications, databases and other online information resources. According to Weingart and Anderson, (2000), there is a great need for promotion and publicizing the electronic resources that was acquired by the library. Besides, libraries should notify users about the availability of electronic databases and use different modes and methods to access electronic resources. As library professionals also play an important role in generating information on awareness and use of online information resources. Therefore, Kattimani, (2010) and Tyagi (2012) suggested that library staff should make users aware of available library resources through e-mail or other alert services. Libraries should provide some promotional materials to the users to develop their interest towards online resources. It should also be done through either compilation or distribution of guides and brochures on online resources or by providing personal assistance to the users in using the online resources. Moreover, a need for on-site training or online demonstrations by the vendors or library staff is identified to maximize the use of subscribed online resources.

2.2.2. Use of Online Databases

With rapid advancement in information and communication technologies, use of electronic resources has become common in academics. As electronic resources have a considerable role in education and research, likewise the understanding of its usage and use patterns have a remarkable impact on library functioning. Seeking information regarding patterns and trends in use of electronic resources will help a librarian to manage information resources in a better way. These patterns and trends in use of electronic resources may also help librarians to identify users’ motives, their opinions, and experiences regarding these information resources (Deng, 2010). With the increasing amount of information production and publication, it has become very difficult to select an appropriate item of information from a huge mass of published literature. Scholars, especially scientists rely on scholarly literature and require appropriate information within the shortest period of time, but to locate their
information they have to struggle with the information overload. Therefore, to deal with this situation, the study suggested the use of bibliographic databases for searching information from a vast pool of literature. Bibliographic database is a very effective and efficient tool for locating information, provides faster and exhaustive access to information. It brings current literature to keep users updated with current developments in their areas of interest, also allows to modify the results by expanding or narrowing the searches, including or excluding searching options and by combining different search options (Konig & Ruffer, 2003).

Evaluation of use of electronic resources is helpful in developing a good collection in libraries, to know the most used e-resources and to assess its impact on educational activities. In addition, use analysis is also helpful in justifying the investments that has been spent by the libraries in providing best e-resources to its users (Madhusudhan, 2010). In an investigation, web server logs and database use counts were analyzed to find out the level and intensity of use of online databases. This use analysis helped in determining the use patterns and major changes that occurred in use of online databases during the investigation period (Jacoby and Laskowski, 2004). The electronic databases enabled library patrons to access information remotely and provided them various options to enhance their academic excellence. Besides, the differences were found in patterns of use, preferences and purposes of use, like someone was liked to use for research work, while others for reading books and magazines. The study ascertains that the electronic databases are easy to use and provides more up-to-date information than conventional sources (Kaur & Randhawan, 2010).

During the last few years, online databases have been continuously increasing in numbers and expanding its role in academics. Now, these have become an important source of information in education, especially in research and teaching. Because of, its enriched contents and worthiness, online databases have been mostly used by the academicians to tap the scholarly literature (Piotrowski, Perdue & Armstrong, 2005). In higher education, academic databases were used as a tool for communication and sharing of data. These were considered as a reference source that contributes largely to the researchers’ repositories by providing necessary information (Uwimana, 2010). Whereas, in the Croatian University, faculty members used online academic databases as important sources of scientific information (Dukic, 2010). The use of these databases has broadened the scope of research by providing a number of
reference literatures to facilitate in-depth research and produce a better result. Article databases have enhanced the research activities in such a way that was not possible with print journals. Therefore, today its use becomes indispensable in generating the productive and useful researches. In addition, a better understanding of information seeking behaviour facilitates to understand the users’ needs that will help to design a better database interface and to increase user interaction with databases (Kozak, 2007). A survey conducted in academic and public libraries in the U.S. and Canada, to capture the opinions and attitudes of librarians, as well as environmental factors within a library that may affect the use of online databases. Inspite of, differences in nature, size and database grouping, the pattern of use of databases in both types of libraries was almost same, followed the same pattern for workdays and academic year. In both types of libraries, users preferred to search databases more often early in the week (Mondays and Tuesdays were the peaks) and in the mid-day, between 11a.m. to 4p.m. of local time. The average number of simultaneous users was related to the size of the population served and the number of workstations available, but comparatively a very less number of users logged on simultaneously to search the databases. However, the database usage was at its peak in the month of November in both the libraries, but in public libraries use was more consistent than academic libraries (Tenopir & Green, 1999). These are the effective means of accessing and searching significant sources of information. By providing a large collection of enriched subject contents, it is improving the quality of research work. Thus, these databases are largely used for research, teaching and tracing new informational sources of education (Khan & Zaidi, 2009; Mannan, Zaidi & Bharati, 2009; Atakan, 2008).

Due to the advancements in ICTs, traditional libraries are now transforming into electronic. The State Agricultural Universities (SAUs) of Jammu & Kashmir provides access to databases to its users to support teaching and research activities. A large number of agriculture professionals were aware of e-databases and used these databases for different purposes like, for downloading articles, research and teaching, and for updating knowledge. The e-databases such as CABI, AGRIS, AGRICOLA and Vet-CDs were vastly used by the agriculture professionals (Mangi, 2014). The study identifies the importance and use of e-databases and role of educational programmes in enhancing the use of e-databases. Most of the research scholars and postgraduate students were having good knowledge of available e-databases and were
satisfied with the available library collection. E-databases were mostly used for downloading articles, and research purposes respectively. The databases, such as AGRIS, AGRICOLA, CAB abstract and agriculture & natural resources were got more credentials than other databases (Naqvi, 2012). Oduwole and Oyewumi (2010) examined that, physicians in Neuropsychiatric Hospital in Aro, Nigeria used databases for teaching, research, decision making and sharing of information with colleagues. The database PubMed had the most extensive use. However, users mostly accessed these databases through on campus cybercafé, nearby areas and from their dwellings, but frequency of use of the databases were limited to just once in two weeks. These findings may have practical and technical implications for database providers and librarians as well.

Currently, online access to journals has become a major boon for academics and considered as an important component to the collection of any academic and research library collection. Many academic institutions are accessing different online resources to fulfill various needs and functions of research, as these online resources have a profound impact on research output. From the study, users’ awareness was found to be satisfactory with the available online resources, but many were seen uncertain with the potential of online journals and databases. Although, users had good knowledge of available online journals and databases, but they used them as additional sources of information. The databases like Science Direct, Web of Science, IEEE/IEE/IEL Online had major use, especially in teaching, research, and extension activities (Tyagi, 2012). Ease in use has direct impact on acceptance, use and usefulness of citation databases. The users mostly liked to use those databases, which are easy to use and having simple search interfaces. It enables users to carry out their search without any complexity or effortlessly (Chun & Chou, 2009). A study finds a correlation between user’s perception and their behaviour towards electronic resources. Users’ demand varied with differences in age, sex and their status (Zhang, ye & Liu, 2011). The factors like demographic characteristics, disciplines, and age have an effect on preferences and methods of use of online databases. The older age faculty members still preferred to use print sources more than electronic sources for searching information (Bar-Ilan, Peritz & Wolman, 2003). However, users selected online resources on the basis of ease in use and availability of full text articles, but variations were seen in approaches used for using online databases amongst the user groups and this probably occurred due to the differences in users’ status, preferences,
and purpose of use. Online databases were mostly used for research, instructional purpose, class assignments, project work, presentations, and gaining knowledge. Among the available online databases, Ovid MEDLINE was most used by the users because of its simple search interface and seamless links to other renowned journals (De Groote and Dorsch, 2003). A study by Majid and Tan (2002) on the use of information resources by computer engineering students at Nanyang Technological University in Singapore revealed the low usage of databases and electronic journals amongst the users. The print form of information was preferred most by the students, the five most used information sources were books, lectures, internet, friends and manuals. The study recommends for promotional campaign for enhancing the use of electronic sources amongst library users.

In recent years, there has been a remarkable growth in the use of databases in the academic world. However, on the other hand, academic libraries are facing problems of shrinking budgets that has considerable effect on the amount spent on purchasing electronic resources. Hereupon, it becomes necessary that libraries should select electronic resources with proper consideration, and take care of other factors related to selection process. The paper also mention some factors that need to be considered while assessing or choosing online databases for a library. The first factor includes patron’s academic standard, as academic libraries serve different levels of education, like undergraduate, graduate, doctoral and faculty patrons. Therefore, it is necessary to choose a resource that fits to the needs of different users’ groups. Another issue in the selection of databases is subject coverage, so libraries have to choose those databases that have appropriate subject contents according to the needs of patrons. In this regard, librarians need to assess each database carefully, take wise decisions and consider factors like, availability of abstracts, full-text accessibility, and scope or subject coverage, search options and indexing, etc. while selecting databases for a library. In addition, budgetary issues should also be considered while selection (Tucker, 2005).

2.2.3. Advantages/ Features

Reichel (1983) mentioned certain features of online searching databases, which includes combination of concepts, comprehensiveness, multiple database searching, free-text searching, currency, current awareness services, document delivery service, and convenience. Better and quicker access to information is a real benefit of online searching. The option of a combination of concepts allows searchers
to make more specific and free-text searching and alert services provides updates regularly to users. According to Naqvi (2012), the contents in databases are regularly updated to provide recently published information to its users. Most journal databases provide current published sources of information as they are added or modified in the collection. The databases used in libraries mostly are catalogues, periodical indexes, abstracting services, and full-text reference resources subscribed under licensing agreements and its access is limited to registered borrowers and library staff only. These are specially designed to target both general and subject specific information seekers by providing information either on very specific topics or on a range of topics. Due to its excellence in scope and functioning, these have become an important source of information that can be accessed at any time, irrespective of any geographical boundary. Feustle (1988) found that electronic data sources not only made searching and retrieving of information easier, but also brings results in seconds rather than spending hours in getting results. These require less effort, less time and retrieve data in such a way that is not possible with print sources.

The primary advantages of using electronic sources mentioned by the Rogers (2001) includes, easy access, 24-hour availability and less time-consuming in getting information. However, lack of a computer, limited online access, limited experience with e-journals, lack of skills in using e-journals and lack of hard copy and more dependence on print sources were some of the problems pointed by the respondents. According to De Groote & Dorch (2003), convenience and availability of full-text have major role in selection of online resources. The databases with links to full text journals and online journals with links from bibliographic databases had a higher usage than other databases. Ovid MEDLINE and MD Consult were the databases that were used usually, because of availability of links directly to full text online journals. This showed that convenience is not only considered in selection process, but also preferred while using online databases. Therefore, it is required that libraries should be more decisive while selecting and organizing online resources and should select those databases that will provide links to other full-text sources.

**2.3 STANDARDS FOR DATABASE USAGE STATISTICS**

The analysis and interpretation of usage statistics of web-based databases have became an important task for librarians. Database usage statistics are essential in determining the cost-effectiveness of databases and helps in making the decisions on its subscriptions. Accurate and consistent statistics of database help librarians to
analyze whether use of databases is justified in terms of the expenditures or not and to make decisions for future subscriptions (Shim & McClure, 2002).

Generally, academic libraries use different approaches to accumulate data for estimating database usage. Variations in the methods used for measuring the database usage inhibit libraries to make comparison between use statistics supplied by different database vendors. Furthermore, differences in policies and provisions of consortium make reporting of database usage statistics more complicated. The International Coalition of Library Consortia (ICOLC) drafted the “Guidelines for Statistical Measures of Usage of Web-based Indexed, Abstracted, and Full Text Resources”. These guidelines help to overcome those inconsistencies that create problems in obtaining usage statistics and in making comparison among different databases (Dunlap & Stierman, 2001). Analysis of use of electronic resources can help the librarians to evaluate the cost spent on purchasing the electronic resources. There are various tools used for measuring the usage of electronic resources. Both publishers and libraries have their own tools to measure the use of electronic resources. Although, most of the publishers produces use counts of their products, but these are mostly incomplete or inconsistent. Only a few international publishers or big library suppliers use COUNTER standard for providing usage count of electronic resources.

Today, libraries are also using different tools to get accurate data on usage of databases, such as proxy logs and analysis of use through IP address, but these are also not so reliable to get data according to the academic status or disciplines wise. Thus, it is important for libraries to adopt a reliable standard to measure usage of its online collection (Bernon, 2008).

The International Coalition of Library Consortia 2006 (ICOLC) has developed a set of guidelines to determine the use of online databases. The guideline specifies some parameters for measuring the database usage. These parameters analyze use through specific database login, by user ID logins and through monthly usage statistics. The University of Malaya Library used these elements for collecting and measuring data related to the use of online databases. The login was used to identify a user by recognizing his name and password and allow communicating with a computer connected to communication networks. The library usage statistics was used to estimate the duration of use and number of times an online database was used by the users. The monthly usage statistics for the past five years identified that, Ovid Medical, Science Direct, Proquest ABI/Inform, EBSCO Business Source and Infotrac
were the most used databases at the University of Malaya library (Sinnasamy & Mohamed, 2007).

2.4. **PREFERENCES TO ACCESS ONLINE RESOURCES**

2.4.1. **Format of Access**

Reading a paper is different from reading on screen and it is more convenient to read a paper. Users mostly prefer those formats that are convenient in use. User groups have different preferences based on ease and simplicity in use. The most-cited reasons of using the electronic formats are; ease in access and use, ease in searching and printing, and accessibility of information at a faster mode (Sathe, Grady & Giuse, 2002). Herring (2002) analyzed a sample of citations from e-journals to understand the changes in information seeking behaviour and impact of e-resources on research activities. In e-journals, electronics resources were cited more than print journals. The study finds that e-resources have brought radical changes in the information seeking behaviour of users and is used as an expansion of traditional sources of information. Now, these are considered as an important source of information in research and teaching. The findings of the study are consistent with the study of Milne (1999), which shows that use of electronic journals is continuously increasing in academics leaving behind its print counterpart. The method of information communication and retrieval has been changed, as library’s’ visit has decreased with an increase in use of electronic information resources. For the period of six-months, Morse and Clintworth (2000) compared the use of electronic and print resources in an academic health sciences library. The findings reveal that the electronic journals are more utilized by the users than print journals. The results of the study ascertained that a large percentage of users in health sciences preferred to use more online resources than print or traditional sources (De Groote & Dorsch, 2003).

A study conducted at Ohio State University in between 1998 to 2000 to assess the use, level of awareness of electronic resources and change in users’ attitude towards replacing print journals. The study used computer-assisted telephonic interview and e-mail for collecting data for a period of three years, i.e. 1998 to 2000. It was found that more than half of the academicians and the students preferred electronic journals rather than printed journals. An increase in the use of e-journal and electronic databases with an accompanying decrease in the use of print journals was noticed. The factors that contributed for maximizing the use of electronic sources were; increase in the use of the internet and growing interest in distance education,
implementation of instructional technologies in university and addition of links from citation databases to full-text articles (Rogers, 2001). Consequently, with the growth of electronic resources, users’ interest was also shifting towards the online sources, but this shift had an inverse effect on print sources. The access and use of print journals are continuously decreasing with the increase in number of online journals. While using electronic journals, many preferred to access and save documents in PDF, whereas a very few used HTML format to view the documents (Tyagi, 2012).

On the contrary, a study of information-seeking behaviour and use of library sources in veterinary sciences shows that most of the students liked to consult books, class handouts and, colleagues and teachers before using online databases for information searching (Pelzer, Wiese & Leysen, 1998). The medical students showed more interest in textbooks and print journal than electronic sources to search the information (Cogdill & Moore, 1997). The reasons of using more print sources were included; aesthetic value (higher quality of photos, graphics, and tables), ease in reading, browsing, and access. The electronic sources were not so liked by the users, as these have several loose ends or links, irrelevant retrievals, false trails and lack of ability to focus onscreen contents (Sathe, Grady & Giuse, 2002). Respondents explained that it was uncomfortable to read text on-screen for long periods and take more energy to read text on-screen. Respondents complained that in databases texts were displayed fragmentally on the screen which lost its contextual structure. Therefore, they preferred to read the paper version to avoid misunderstanding the texts. Moreover, they questioned on accuracy of ancient Chinese books, databases because of errors that showed in results, such as incorrect characters and punctuation (Wu & Chen, 2007). The studies find that print form of documents was the most used form of information amongst the students. Use of online Journals and databases was low as compared to print journals, as users used more print journals. Therefore, user satisfaction level in respect to electronic resources was low in comparison to print documents (Majid & Tan 2002; Nikam & Promodini, 2007; Punchihewa & Jayasuriya, 2008). Whereas, a study by the Upadhyay & Chakraborty (2008) states that online sources cannot replace the print sources rather these are the substitute of print sources and both are equally requisite for a modern library.

Despite, all these discriminations in users’ preferences, challenges always remained for libraries to keep a balance between print and online resources to meet various needs of users and help them to select appropriate sources according to their
information needs rather than format or convenience. However, the findings of the study confirmed that a large fraction of users in an academic health sciences environment preferred online resources, but used only a small portion of available online resources and seemed unaware of the broader spectrum of available online resources (De Groote & Dorch, 2003).

2.4.2. Modes and Sites of Access

Modes of access of online resources also have an impact on library and its services. Libraries provide various access points to access available databases. The library website is a primary point to access information regarding library resources. It is a gateway to access to library sources and services, like electronic indexes, databases and primary research materials. Thus, usability testing of library’s website became important to maintain its consistency, to meet changing demands of users and to identify the problems related to interface design (Battleson, Booth & Weintrop, 2000). Libraries generally used its home page to support educational and research programmes of their parent institutions. It is also used to provide access to its collection and relevant information related to its services and sources. Hence, educational activities greatly relied on the information generated by the libraries (Chisenga, 1998). Library’s website provided direct access to commercial online databases and links to commercial online databases. It was used as a primary and convenient point to access web-based library’s databases (Bao, 2000). Library’s web pages and online catalogues are consulted as prime access points for getting information regarding the library’s collection. Therefore, the library staff should be more attentive and organized while arranging information on the library web page. Likewise, library database’s page must clearly indicate a database name, subject coverage, dates and full text availability and identifiers to provide a complete description of a database to information seekers (Huggard, Hopley, Groenewegen, Horne, Smith, & Leighfield, 2002).

The universities have their distinct policies and strategies for dissemination and retrieval of online sources. In universities, online databases can be accessed either through ID logins or through IP address. However, providing access through login and password has some chances of misuse, but allowing access through IP address is found to be a safe and most preferable mode of access. Today universities are providing access to online databases to its users through recognized IP addresses (Kumar, Roy & Satija, 2011). The frequency of use of electronic databases also
depends on users’ preferences and provision of library services. For better use of electronic databases, library should provide off-campus access to electronic databases to staff and students, as well as provide passwords to the students for secured access to databases (Soyizwapi, 2005). The agricultural libraries in India are now subscribing a large number of electronic resources to meet shifting needs of their users. However, many agricultural scientists were satisfied with available database services in their respective library, but the frequency of library visit had been decreased. As, many of the e-databases were available either through IP address or user ID authentication on users’ devices (desktops or laptops) or divisions, and they preferred to use library resources from their places rather than from the library (Mangi, 2014).

Now a days, users prefer to access their information remotely at their places rather than going to the libraries. Therefore, more reliance on desktop access had reduced the users’ visits to libraries (De Groote & Dorch, 2003). Remote access to online library resources has altered the way of using the libraries. As most of the information resources are available online and only a few patrons are bothered to come to the libraries for information seeking (Upadhyay & Chakraborty, 2008). To maximize the use, libraries have to consider the provision of remote access for off-campus usage. For better provision of remote access, library should provide instructions to users on fixing browser on their computers and provide IDs and passwords to access library’s databases (Bao, 2000).

2.5. **ISSUES RELATED TO ONLINE DATABASE SEARCH**

2.5.1. **Searching**

During the last few decades, there has been noticed an increase in use of online information retrieval systems. Online searching enables users to access those databases, which do not have any equivalent in any form of literature. The cross-file searching within databases enables a searcher to find highly relevant records of information that is not possible to obtain through an exhaustive search in any manual reference source. Moreover, it makes possible to search contents faster, thoroughly and more efficiently within minutes. However, it takes hours or a day(s) to search information through manual reference sources (Odini, 1994). Online searching is an interactive (conversational) mode of searching of machine-readable databases. It involves interactive dialogues between searcher and computer. The computer matches an input search term against its files and displays matching results that can either be printed out or downloaded by the enquirer (Chowdury, 2010). It answers to user
queries more rapidly than traditional searching and more supportive to encounter a

demand for better searching. It provides a wide range of search tools and access

points through which online resources can be searched anywhere simultaneously.

Furthermore, it provides more up-to-date versions of information sources within a

short span of time that usually is not possible with print subscriptions (Rice, 1985).

Online database searching enables users to search any current or popular topic with a

greater ease and provides different options to combine search terms for better

retrieval. Conversely, manual indexes are only searched by their standardized

headings, which are formulated earlier by the indexers and searchers having no option

of applying any search technique for seeking information (Reichel, 1983). Like any

other online sources, searching a database also requires skills and knowledge of

different searching techniques to get an appropriate result. Users learn these

techniques, mostly through trial and error method, reading guidelines from websites,

asking friends and library staff. While searching online databases, users mostly like to

use simple and keyword searches rather than other search options like, advanced

search, expert search, etc. (Sinh & Nhung, 2012). Cmor, Chan & Kong (2010)

assessed student learning behaviour, which is related to the database searching. Three

different assessment methods were used at three different points to ascertain both

students’ learning behaviours and attitudes. Students were not applying any search

technique that they learned during the course. Therefore, students have to learn about

databases and its importance in their study and work. Regarding searching, Mercado

(1999) suggested that the library users should learn significant skills of selecting

appropriate databases and search techniques to get better results.

Simple search was rated as a most favourable search technique for retrieving

online information, while users used advanced searches rarely, only for getting some

specific information. Although, the advanced search is an effective approach for

online search, but many users are not aware of its potential. Therefore, librarians have

to teach its users about potentials of advanced search in literature searching

(Kattimani, 2010). The most popular search method identified by the investigators was

keyword search. The second most favorable search option was searching by author,

which was then followed by journal title, subject and searching through abstract

(Nisha & Ali, 2012). Boolean operators, phrase searching, field specific searching,

wildcard and truncation are the common search features. Boolean logic is one of the

basic search options that are available in every online information system. Boolean
operators followed by truncation and wild card search were most preferred search techniques amongst users (Punchihewa, 2009 & Ali, 2005). While conducting searches, most participants used basic searches rather than combined searches (i.e. Boolean logic search). Although, the scholars appreciated the database coverage, but complaints about the difficulties of searching language and lack of availability of desired resources. Participants did not make use of combined searches because they were either unaware of its functioning or felt that this would retrieve fewer results. Most of the participants used basic search method only and seemed satisfactory with the results brought by the databases. Besides, students showed positive attitude towards database’s screen prompts, search functions, search results, response time, results displayed, and the whole system, but complained about its online help and error messages (Wu & Chen, 2007).

The study reveals that users used browsing for finding index, expand of the table of contents, and for obtaining search history. It also suggested that retrieval features should provide user control through different search options for retrieving needed information (Xie & Cool, 2000). Kline (2002) grouped problems into four categories; searching difficulties, retrieval issues, document discrimination problems and interface design quandaries. The current search tools exhibit a number of weaknesses and users have difficulty in constructing sophisticated queries needed for effective retrieval. Hamilton, (2003) evaluated the usability and effectiveness of different electronic versions of Encyclopedia Britannica on the basis of its searching competencies. The study revealed that it answered the queries with great ease and precision.

Relevance of the retrieved documents is the central issues of information science research. Relevance is a criteria used to measure the degree of association of an item retrieved in search documents as a result of query submitted to the retrieval system (Jasco, 2006). Database providers offer several retrieval facilities in their systems to retrieve data more accurately. The retrieval features are of mainly two types: common and unique features. Common retrieval features, which include Boolean operators, phrase searching, field specific and limit field searches, truncation, and wildcard. While, unique features include lateral searching, density and frequency of terms, reference links, and searching by table of contents. However, almost all database vendors provided these searching features in their systems, but its interpretation and implementation varies from system to system. The study
investigates twenty-five online databases of twelve different database providers to examine the functionality of retrieval features. Users felt difficulties while searching online databases and liked to see more examples on searching, as unique features were too advanced for untrained users. Consequently, it was recognized a need for more examples on search techniques in addition to help menus, guides or tutorials. Database providers should also incorporate users’ expected retrieval features, i.e., relevance, feedback and term weighting, and create synonym links of terms in thesaurus and more search examples in online databases (Othman & Halim, 2004).

2.5.2. Problems

The most common obstacle identified during the use of electronic resources were lack of knowledge regarding specific electronic resource and lack of training. Unexpectedly, lack of funds was also considered as one of the obstacles, followed by insufficient number of hardware and software (Adam & Bonk, 1995). Beside these common problems, there were other issues that deterred the users to fully utilize the benefits of electronic databases, such as limited off campus access, logging-onto the databases and password requirements. Complications in searching were also identified as another problem with which students often suffered. There is emerging a need for further improvements in library’s educational programmes on database usage (Soyizwapi, 2005).

The investigators, Koovakkai and Noor (2006), Atakan (2008), Madhusudhan (2010), Maharana, Bipin and Behera (2010), and Naqvi (2012) identified the problems that was mainly faced by the users while using electronic resources, including lack of guidance, slow downloading, poor connectivity, poor facility, erratic power supply, inadequate number of systems. Apart from these, there are some other problems that are mentioned by the respondents as personal shortcomings i.e., lack of IT knowledge, lack of interest, lack of skills and lack of time, etc. Rogers (2001) mentioned limited experience with e-journal and non-availability of hard copies as the foremost disadvantages cited by the respondents. Junni (2007) and Nikam & Promodini (2007) mentioned one of the main problems that students usually faced is lack of training in seeking proper utilization of online information. Many respondents expressed the need for additional training for using library databases. While, Singh and Arora (2010) and Ali (2005) stated that lack of training to access digital resources, trained manpower, financial support, improper ICT infrastructure, etc., are the factors that hinder the use of e-resources. According to the Rehman and Ramzy
(2004) and Dukic (2010), timings of the library also caused inconvenience to the users in making use of library’s electronic resources. It obstructed the users to use library resources to according to their convenience.

Retrieval of irrelevant information identifies as a most common problem faced by the respondents. The accuracy of the results mainly depends on the search options used to retrieve information. Using the right retrieval option is very necessary to get the accurate results. Proper execution and selection of right retrieval features were not easy as these features were not identical, they vary from online database system to system. Thus, this created a problem for the users in the formulation of queries by using the appropriate searching option (Kaul & Randhawan, 2010). The users felt difficulties with retrieval features while searching the online databases. The users, particularly undergraduates and masters faced difficulties in finding synonyms from the thesaurus and could not be able to re-formulate search strategies with synonyms and pseudo-synonyms. However, retrieval interfaces have been improved much, but users did not find retrieving features as good as it was claimed. There were the issues relating to the configuration or subscription of online databases, technical difficulties, limited access that also threatened the use of online databases in libraries (Othman & Halim, 2004). The problems, like retrieval of irrelevant information, interruptions and failures in getting information, lack of expertise in searching, the high price of access of electronic resources obstructed the use of electronic resources. Moreover, unavailability of desired electronic resources, disrupt power supply, difficulties in navigation and complexity in searching and time-consuming downloading and were also regarded as major obstacles in the use of electronic resources (Ozoemelem, 2009). Problems of obsolescence of database contents, compatibility of hardware/software and cost factor also created difficulty in using online resources (Hoskins 2005). To overcome the problems of lack of time, lack of skill, poor connectivity, interrupted power supply and technical problems in using the e-databases, library should reinforce their awareness and guidance programmes through providing training and retraining to users on use of databases. The study suggested that library should develop a library portal and improve ICT infrastructure in libraries for providing better services. In addition, libraries need to subscribe more databases and install more networked computers with appropriate software for searching (Oduwole & Oyewumi, 2010 & Mangi, 2012)
The effective use of information sources also depends on proper organization of Library’s resources through either catalogues or library’s home page. Lack of knowledge regarding available library sources prevented the users from making use of available library sources (De Groote & Dorsch, 2003 and Khan & Zaidi, 2009). The major dissatisfaction related to the use of online databases was limited to access of full-text articles, i.e., full-text articles are available in recent volumes only. Thus, non-availability of full text articles seemed as a barrier in use of online academic databases. (Piotrowski, Perdue & Armstrong, 2005). Insufficient collection of electronic resources in the field of Arts and Humanities impeded the users to exploit the benefits of advanced literature published online on their subject of study. Moreover, unavailability of back issued in electronic resources compelled users to use more print resources (Gash, 1989).

The problematic areas addressed by the users were non-PDF formats, large text files, server related problems and connection speed. Even, searching and retrieval interface of a library portal, instructions relating to use and downloading, online help and training were pointed out by the users as areas of concern. The Library staff also encountered problems related to time-out and limited access to databases to users posed by some of the vendors while providing online sources (Huggard, et.al., 2002). The limited or controlled access to online databases also restricted the users from using online databases. Some of the subscribed online databases are password-controlled and its access was limited to one or two users at a time, while others accessed through Internet Protocol (IP) address that limited users to access database within a campus only. Such controlled access obstructed the users to utilize the benefits of these valuable sources of information (Jagarnath, 2004).

Kumar, Roy and Satija (2011) discussed some technical issues that was generally faced by the Universities in India while providing access to online sources for users. These are mostly relating to the inadequate bandwidth and slow delivery of contents. Thus, a need for standalone servers with proper power backup and fast and wide communication networks with adequate bandwidth for fast information sharing was recognized. In this regard, University Grants Commission (UGC) has formed a national committee ‘Central Monitoring Committee’ (CMC) for proper execution of information infrastructure in Indian universities. The CMC collaborated with ERNET India (Education and Research Network) to set up information networks in universities. The committee has also suggested for high bandwidth campus wide
networks to speed up the internet connectivity in Indian universities. Consequently, 149 universities have got network connection of bandwidth with a range of 512 KBPS to 20 MBPS.

Sinh and Nhung (2012) mentioned three types of difficulties that deterred users from using online databases that included; poor searching skills, English language and low speed of online transmission. Users were not using online databases frequently and losing their pace of searching. Besides, the English language was another barrier to keeping users away from using online databases. Without having good command on English language, users faced difficulty in finding a suitable keyword for searches. In addition, users had to spend lots of time in browsing and searching the information. Thus, searching takes a lot of time to retrieve the desired results. Marshall (1987) categorized difficulties under three groups: intellectual, technical, and system that was experienced by the users while conducting searches. The most cumbersome difficulty encountered by users was intellectual difficulties, which was related to the searching on the complex topics of study and broadening or narrowing of searches by using significant options or limiters. The technical difficulties were related to the hardware and software complexities, keyboarding and learning or getting expertise in databases searching. While, the system difficulties dealt with instructions, practices and procedures, learning systems and database selection.

2.5.3. Training

User’s knowledge and skills play an important role in getting the desired results on the topic of interest. Training is one of the modes of enhancing users’ knowledge and skills while searching of online resources. Besides, users also preferred small-group classes, workshops and printed manuals to learn more about electronic resources. Users suggested that library should integrate different modes of training with its existing instructional programmes. Organization of workshops with printed documentation can be a more effective mode of imparting training. Furthermore, libraries should provide information in both electronic and print formats to communicate information on library’s electronic resources (Adams and Bonk 1995). As promotion and publicity have remarkable impact on use of library resources, library staff should publicize databases through library classes, printed guides and even through the virtual librarian to facilitate users in finding information (Huggard, Hopley, Groenewegen, Horne, Smith, & Leighfield, 2002). Kaur and
Verma (2006) Library should organize user education and awareness programmes and educate users to make maximum use of electronic resources. Kaur and Randhawa (2010) and (Dukic, 2010) recommended that more training session should be organized to enable users to retrieve their information in a more appropriate manner. In addition, library should provide additional training to young teachers to work with online academic databases. Odini (1994) in a study, made a comparison between print and online sources to analyze their functionality and searching capabilities. The study assesses the performance of two manual indexes; Engineering Index and Current Technology Index and three related online databases include COMPENDEX, NTIS and SCISEARCH to assess their capabilities in information retrieval. COMPENDEX was found to be the best online source for searching the literature. On the other hand, the browsing through online databases leads towards the collection of highly relevant records of information. However, searching through the print sources is not very suitable, particularly for urgent searches, although these are having a comparatively high precision and high recall value than online databases, which make them a good supplement to online literature. Consequently, the author suggested that a database should be selected on the basis of its high recall and precision value and then by considering its cost.

For optimum use of library’s online sources and services, user orientation programmes have become essential, especially for novice users to help them to make efficient use of these retrieval systems. User orientation programmes are the most important part of learning of online databases to gain knowledge and enhance usability of databases. Library staff have to makes its users aware of these resources by organizing different orientation programmes. However, there is no standard pattern for conducting orientation programmes, different universities or institutions organize it in their own way (Kumar, Roy & Satija, 2011). This study identifies the importance of online databases and the role of user initiation and training programmes in enhancing the use of online databases. The awareness and guidance programmes related to the use of online databases help library users to increase their basic knowledge and identify those databases that are relevant to their study. The library of Malaya University organized different types of training and guidance programmes to make users aware and well versed in using online databases and to increase the use of online databases. During these programmes, library staff provided a brief introduction about library’s sources and services to novel users, organized various training
sessions, and distributed brochures and subject guides on the use of online databases. Imparting basic information regarding online databases and its importance helped the users to choose the best one according to their needs. Thus, this had made a noticeable hike in the usage of online databases (Sinnasamy & Mohamed, 2007).

Change in use patterns will require that the libraries should consider their collection development policies, promotional and training programmes and other services to keep moving with ever changing demands of users. There also requirement for web based instructions, online guides, virtual library tours, tutorials, and online reference services to be a part of library instructional program. Outreach promotion of resources has always remained a challenge for libraries. Therefore, new approaches, like onsite training to remote users and dissemination of information through e-mails might be good alternatives to reach to the outlying users (De Groote & Dorch 2003). The information regarding popular databases and search options will help library professionals to ascertain the use behaviour and practices. The results of such studies may also help librarians in providing instruction on searching and user interface and enable them to develop training courses on search strategies. Besides, it may also help interface designers to develop such interfaces that will better suit the users (Kozak, 2007).

**2.6. USE OF ONLINE DATABASES IN THE ARTS AND THE SOCIAL SCIENCES**

The discipline Social Science is more diversified in nature and incorporated a large number of research areas and social scientists heavily relied on incessant availability of information of both types; discipline-oriented and mission-oriented. However, information sources in the field of social sciences are abundant, but to access the right information is really a difficult task to an end user, as seekers do not have an appropriate knowledge of available information in their areas of study. Social scientists in the Mizoram University used different types of documentary and electronic sources for seeking information. They showed more interest towards printed documents rather than electronic sources. Print sources were considered as more important, although a number of electronic sources were available in the their field, but these were in less use and less popular amongst the users. As journals were the important means of scholarly information, print journals were used more frequently in research and teaching, than textbooks and reference books (Kumar, Singh & Yadav, 2011). In Social Sciences, faculty members made use of all the e-
resources that were available in the university, as these provide easy and quick access to advanced information in a much better way than print sources. E-journals were at the top amongst the most favourite sources of information, followed by e-books, online databases and e-reports (Negahban & Talawar, 2009).

Past studies have shown that the humanists preferred more to use books rather than electronic resources for seeking information. Although, electronic resources were favoured for their convenience and easy access, saving time and changing information-gathering behaviour, but still users perceived electronic sources as a complementary and relied more on documentary collection in the library. However, the humanities students were also regarded electronic resources useful to some extent, but they cited comparatively a very less number of electronic resources. Nevertheless, the results of the study clearly indicate that the library was still a prime source of humanities’ students for receiving documents and information. The reasons for more reliance on books and other traditional sources than e-journals in the field of humanities may possibly be the lack of availability of electronic resources in humanities in comparison to other fields, documents used in humanities mostly dated back to 30, 50, or over 100 years. Moreover, the departmental style of education, where they required more citations from print sources rather than electronic. Finally, the accuracy of electronic resource always remained in doubt and its authenticity was also questioned by a number of humanists (Wu & Chen, 2010). Adam and Bonk (1995) found differences in use of electronic sources and services among different disciplines of study. In humanities, faculty members pointed out that the network connectivity and availability of allied equipments were the factors that played an important work in increasing the use of electronic sources.

In a study, Rimmer, Warwick, Blandford, Gow and Buchanan (2006) investigated the humanists’ information behaviour in both digital and traditional information environments. With the advent of World Wide Web and internet technologies, there has been noticed a remarkable increase in the use of digital information. Whereas, the humanities scholars were not using these technologies frequently, except common tools like Google and online library catalogues, etc. The researchers were not usually interested in using digital resources in research work, though they liked to use books, monographs and traditional sources of materials. The reasons may possibly be the lack of comfort and confidence with technology-enabled sources, more dependence on traditional and informal sources of information and
follow traditional ways of searching and formulating queries. The results of the study may help administrators and e-resource developers to design such electronic resources that provide better research and teaching activities in humanities. Tahir, Mahmood and Shafique (2010) made recommendations to improve ICT services in the field of humanities. Libraries should be more concerned towards making available more electronic resources in the field of humanities. In addition, special training programmes should be arranged for proper exploitation of ICTs and improve the accessibility of electronic sources and services for humanists. Besides, the university must provide sufficient amount of money to library from time-to-time for upgradation and acquisition of more electronic resources.

In a survey-based study, Marouf and Anwar (2010) investigated the information-seeking behaviour of Social Science faculty in Kuwait University. The respondents heavily relied upon Print sources of information for teaching and research, whereas the use of electronic sources was comparatively low to print sources. However, user satisfaction level with all the information sources was constructive, but higher with print sources. Therefore, understanding of information-seeking behaviour of Social Science scholars may help libraries in developing appropriate information resources and services to Social Science community. The same findings were analyzed in another study on Information-seeking behaviour of humanists and social scientists conducted by De Tiratel (2000). Both humanists and social scientists showed the similar pattern of information seeking, consulted more print sources than electronics, especially books and print journals. The majority in the humanities liked to consult with colleagues first, then printed documents and electronic sources.

In Political Science, use of online bibliographic databases greatly helped the researchers in literature searching. However, the researchers were greatly benefited by the searching capabilities of online databases, but their major concern was still remained with print sources. Users neither looked more interested in use of online database nor keen to learn about its functionality and importance. The best approaches identified by the investigator to encourage users about online searches include, impart information to users regarding benefits of online searching and teach them how to make use of them. Libraries also needed to strengthen their collection through cooperation and interlibrary loan services. It is also recommended that students should attend library lectures or orientation programmes to get knowledge of available
electronic resources in their respective field (Reichel, 1983). Schaffer (2001) conducted a comparative study of nine political science databases to find out the usefulness of databases in political science. More influence had been seen regarding the favourite databases irrespective of other available online databases.

In a study, Junni (2007) noticed the significant differences in the methods used by the users of different disciplines for searching electronic information sources. Respondents in Psychology and Economics were quite pleased with online sources and searched more sources from the Internet. However, in Mathematics users cited only a small number of online sources in comparison to Economics and Psychology. The differences found in usage of these resources might be due to the differences in research traditions, quality and structure of fields of study. Mcdonald, Taylor and Adams (1999) analyzed the use of online databases to determine the extensive coverage of Psychiatry journals and to identify overlapping of journals among the databases. As journal coverage is one of the factors that affects the use of bibliographic databases. The databases PsycLIT, EMBASE, BIOSIS and MEDLINE found to be most frequently used databases in the field of Psychiatry. Among these four databases, PsycLIT had good subject coverage in psychiatry, but when database PsycLIT was combined with EMBASE, yielded the highest index of Psychiatry journals. The combination of both databases was holding the maximum number of journals of psychiatry. This would enable a searcher to search more than one database or with a combination of two or more databases to get optimal literature on areas of interest.

In a study, Chapman (2002) analyzed the full-text database assistance in research in Finance. The study analyzed and compared the title lists of three full-text databases; ABI/INFORM Global, Business Source Elite, and General Business File with a list of articles cited by the researchers. The results showed that not all the databases had good coverage in the field of finance, only the databases ABI/INFORM Global databases had the most comprehensive coverage of scholarly journals. In the same pattern, Cory (2005) analyzed database support for research in public administration. The purpose of this study was to provide in-depth analysis of six databases that were used for research in the area of public administration. For the study, Expanded Academic Index ASAP (Gale), Academic Search Premier (EBSCO), ABI/Inform Global (Proquest), Business Source Premier (EBSCO), and General Business File ASAP (Gale International Academic Research Library (ProQuest) were
analyzed. Each database holding was compared with a list of journals cited by the researchers in public administration. The databases were compared on the basis of three criteria; abstract, full-text availability, as impediments in full-text access. The results illustrated that Expanded Academic Index ASAP, Business Source Premier and International Academic Research Library had the most comprehensive coverage in public administration, whereas only Expanded Academic Index ASAP and Academic Research Library had provided better full-text coverage of public administration journals. The overall analysis showed that Expanded Academic Index ASAP was found to be the best source for public administration research. Hence, it is recommended that the libraries should purchase those databases that cover more scholarly journals in public administration.

While the impact of ICTs use of electronic resources is continuously increasing, but still philosophy students relied more on monographs, anthologies and older materials. The inclination towards the old information materials may be due to the inaccessibility of these older and traditional materials through electronic means. The findings of the study can help the electronic publishing industry to make more electronic resources available to fulfill the needs to philosophy students (Okrent, 2001).

2.7. ROLE OF LIBRARIES

Online databases have become important tool for an information searching in all disciplines and research areas; therefore, widespread access to such resources also became important to justify its value and significance. In this regard, libraries must provide global access to their network resources for their outlying users, so that every user could access library’s resources remotely (Adams & Bonk 1995). Increasing costs and declining library budget have made desirable that librarians should take decisions wisely while purchasing electronic resources for the library. Local environment, pricing, database features, hardware compatibility and cost, and network accessibility should be considered while selecting a database for a library. Database pricing is based on a number of policies that are fixed by the vendors or copyright holders. So, libraries need to use cost-measurement techniques to evaluate cost effectiveness of databases. Along with pricing, hardware, features, and network infrastructure also play an important role in selecting an appropriate database. Generally, electronic databases present several features, which are ranging from basic to optional features, where basic features are inbuilt into a system, optional are value-
added features, provided at an extra charge. Database features varies from vendors to vendors, some vendors provide different versions of single database, like non networked version, LAN, and remote access versions of a database. Therefore, while selecting a database, libraries should chose those features, which will be helpful for proper utilization and their implementation in libraries (Allison, McNeil, & Swanson, 2000).

The exponential proliferation of ICTs, impels libraries to provide technology enabled sources and services to the patrons. The proper utilization and management of these technology based services require the involvement and support of library personnel. Now, the role of librarian is no more that of a document curator rather it has turned to information disseminator and consultant of information services. These changes require library personnel to be proficient in these sources and services and possess skills to operate them efficiently (Hoskins, 2005). Librarians usually play an important role in the enhancement and promotion of electronic resources. In a study, Schaffer (2001) noticed that the instructions provided by the reference librarians greatly helped the users in using electronic resources. They influenced patrons to use more electronic resources and facilitate more comprehensive searches. Therefore, librarians have to take steps to promote electronic resources by providing instructions and organizing training programs to influence theirs users. According to Kaur and Verma (2009), librarians should examine collection development strategies for better use of e-resources. In selection of e-resources libraries should include faculty members and research scholars to identify important information sources. Feedback must be taken from them to find out their needs and reasons of not using e-resources.

Ali (2005) suggested that libraries should keep pace with changing prospects of ICTs to provide effective services to their clientele and take steps to transform itself into a modern library. According to the Pangannay and Kumar (2000), modification of libraries can be done by timely evaluation of its services and practices and getting feedback from users for better provision of services. Libraries have to move on with changing demands of users to modify and update their services in accordance with their needs. In the study, Wu and Chen (2010) suggested to add more electronic resources in the collection to make library’s collection more influential and efficient.
2.8. SUMMARY OF THE CHAPTER

In the literature review, several national and international studies related to the use of online databases have been examined from different perspectives. The literature survey of previous researches and studies provide understandable information on the use of online databases. The chapter covered different topics of online databases and its use, awareness, searching, problems and its usage in the field of Arts and the Social sciences and the role of academic Libraries and training programmes.

The gathering of usage data for online library resources has increased its importance, as libraries and its users heavily rely on such resources. It helps to justify and plan expenditures, and gauge the need for information literacy initiatives (Bar-Ilan, Peritz & Wolman, 2003; Kim, 2006). The current work helped the researcher to draw findings or ideas that will create new perspectives for further study. It also facilitates the readers to know what has been done and what still needs to be accomplished on the topic of research. Thus, literature review creates a greater literary base to produce a better and more in-depth research on usability of online databases and adding knowledge to the field of inquiry.
REFERENCES


Mannan, K., Zaidi, S.M. & Bharati, S. (2009). Use of on-line databases by faculty members and research scholars of Jawaharlal Nehru University (JNU) and


CiteSeerx Database.
http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.98.1778


