

CHAPTER 11

REVIEW OF LITERATURE

2.1 INTRODUCTION

Review of related literature is a very significant aspect of the research process. Knowledge of related studies enables the researcher to define the frontiers of the area under the purview of study. A review is an essential step to get a complete picture of what has been done and suggested already with regard to the problem under study. Review brings about deeper insight and clean perspective of the overall field. A familiarity with the literature on any problem area helps one to discover what is already known, what others have attempted to find out, what methods of attack have been promising and what problem remains to be solved. It is an indispensable step for the researcher to understand the problem. The study of the previous research findings gives a clue to the potential areas of fresh research and missing links in the process of research. Review of related studies further avoids duplication. It thus helps the researcher to study the different aspects of the problem. It also enables the researcher to identify the unexplored areas, in order to create new grounds for research. By considering this efficiency of various dimensions of Scientometric studies, the researcher has presented the literature on the basis of reverse chronological order.

2.2. STUDIES BASED ON RELATED DISCIPLINE

An attempt has been made by the investigator to collect the literature and studies which are related to the problem taken up for this study. The attempt is to highlight the findings on some of the studies relevant to this topic conducted in India and in other countries which helps to undertake this study in a systematic manner. A

number of studies have been carried out on the usage, awareness, attitude etc., regarding electronic resources to the library and the studies are briefly listed below.

1. Information necessitate
2. Information sources
3. Information seeking behaviour
4. History of research on information seeking
5. Models of information seeking behaviour
6. Research on information seeking behaviour
7. Variables influence on information seeking behaviour
8. Research related to electronic resources usage

2.2.1 INFORMATION NECESSITATE

Dehpadekani, H. S., & Pourhamidi, M. (2011) conducted a study to find out the information needs of nomadic students in Iran in order to present a library service model to meet their needs. The results show that the preferred information format of the majority of students was print, especially books. Most of the students stated that they were in need of cultural and medical non-educational books. The study led to improved and expanded library services for respondents who are deprived of such services, including audiovisual services, extending the book collection, loaning books, advertising books and other publications, reference services, technical services and providing needed information to them.

Amy, F., & Lesher, M. (2011) who investigated the Electronic Resources Coordinators for Bowling Green State University (BGSU) presented a comprehensive analysis of what libraries can and should do to help users access their databases. She

discussed an ongoing project to update her library's database Web pages to enhance their utility for library patrons. During her presentation she explained how she identified the best practices in Association of Research Libraries, member libraries, made recommendations based on these best practices and discussed the work in implementing her recommendations.

Yu, T., Lin, Y & Ho, T. (2010) studied on the use of ICT in higher education, particularly e-learning has been becoming increasingly popular over the past decades around the world. Since the authors' institutions have been implementing synchronous or asynchronous e-learning courses these years, how to involve in or think about involving in the e-learning environment is becoming a significant issue at the moment to all people who work in the libraries of technological universities. Some purposes achieved by the study are as follows: i) understand the faculty's needs for the services of the library in the technological universities in an e-learning and e-teaching environment; ii) compare the different needs for the services of library among faculty with different backgrounds such as gender, academic college, course of teaching, position, teaching experience with e-learning; iii) analyze the role of the library of technological universities in the e-learning environment; and iv) provide ideas and suggestions for enhancing the content and quality of the library services to the technological universities in the e-learning environment.

Kroeker, B. (1999) investigated and concluded that the World Wide Web is changing the face of today's academic libraries, that is, the way in which we use them and how we give value to them. The author explains what the Web means to the academic library and why it has become worthy of consideration. He shows that the

Web will have a great impact on the library, whether the library wants it to or not, and that this impact will in large part be dictated to the library by forces both technologically and socially based and, therefore, beyond the library's overall control. Some consequences that the author sees of attempting to ignore Web technology or providing inadequate resources to it are discussed as well. Finally, he presents some of his observations on how the Web is changing the balance between the libraries as provider of information and teaching faculty as providers of education.

Information necessitate is the desire of an individual or group to locate and obtain information to satisfy a conscious or unconscious need. The 'information' and 'necessitate' in 'information necessitate' are inseparably interconnected. Needs and necessitate interests call forth information.

The concept of information needs was coined by an American information scientist Robert S. Taylor in his article "The Process of Asking Questions" published in *American Documentation* (now *Journal of the American Society of Information Science and Technology*).

Dervin & Nilan (1986) has reported that information is "something constructed by human beings". **Reneker (1992)** has found his earlier studies primarily focused on scientists and technologists and meant to assist them in building information resources and systems for them to effectively meet their information needs. **Kuhlthau (1993)** held that information need is often understood in information science as evolving from a vague awareness of something missing and as culminating in locating information that contributes to understanding. **Belkin (1978)** reported in the cognitive viewpoint "information associated with a text is the generator's

modified (by purpose, intent, knowledge of recipient's state of knowledge) conceptual structure which underlines the surface structure (e.g., Language) of the text". **Wilson (1994)** suggested that the need for information is governed not only by cognitive reasons; equally important are affective and physiological ones. **Belkins et.al., (1982)** has reported that information needs can be described as an Anomalous State of Knowledge (ASK) or a gap in an individual's knowledge in sense making situations. According to **Chapman's (2000)** study, the students are often not able to make sound judgments about the quality and relevance of information. This may be a problem for many end-users, since the quality, aim and target audience of the information may vary significantly.

2. 2.2 INFORMATION SOURCES

Now a days plenty of information sources are available in different format like soft copy and hard copy. **Smith (1987)** has found that about one-half of the respondents from Pennsylvania State University relied more on their personal collections and borrowed materials from other libraries. **Olsen (1993)** has supported that electronic library literacy is essential for any individual to be successful in the coming century.

Hart (1993) has investigated the scholars and researchers using the Internet in place of more traditional venues to offer their thoughts, research findings and theories for review by their peers. Electronic, refereed journals have become important sources of scholarly research. **Shade (1995)** has noted that faculty members and students "depend on the Internet as a medium for generating scholarly discussion, peer review and feedback, expediting the pace of academic research and cementing diverse scholarly communities inter-institutionally".

Nkereuwem (1984) has noted very low frequency of library visits by petroleum scientists and engineers in Nigeria, where about 84 % of the respondents reported visiting their library just a few times a year for their information thrust. **Rossman (1992)** has suggested many universities have merged their libraries and computer centers, and 'library resources' are increasingly in hyperspace. The use of microcomputers and sophisticated telecommunications systems by faculty and students means that 'service requirements in the electronic university will be driven and shaped by this increasing use of technology.'

In the area of fostering increased scholarly communication, **Kovacs, Robinson & Dixon (1995)** have examined how library school faculty members used list servers and similar discussion lists. Responses to their survey led them to conclude "E-conferences may be enhancing the value of established information sources such as journals, physical conferences, interpersonal mail, and telephone contacts. Most of the respondents feel that e-conferences replace some of the established sources for them, especially, the telephone and paper mail".

Mashadi and Han (1996) reported that "information and communications revolutions have resulted in the Internet building "means of information exchange which have 'annihilated' distance and time and accelerated the process of creating a global community of inquiry".

Bruce (1998) has outlined some expected benefits to teachers who use the Internet in the classroom. These benefits included using E-mail to build contacts with colleagues to exchange ideas and help students with assignments; increased access to library information from remote sites; demonstrations of new technologies in the

classroom; and an increase in administrative and personal research efficiency. In a survey of faculty members across the United States, **Magner (1999)** found that many older faculty members reported they were “being more stressed by information technology even though they are not using it as much as younger faculty”. **Lennertz (1999)** has found that the faculty members were active users of the Internet. Their use of the Internet affected their communications patterns, teaching activities and research. The more active users felt their productivity increased because of their Internet usage.

Perlman and Johnson (2000) have investigated that the Internet had grown to contain “2.1 billion unique, publicly available (home) pages.” **Herman (2001)** concluded that more than half of scientists were using e-journals and scientists were using them more than social scientists or humanists.

Association of Research Libraries (2005) that faced increasing competition from a major information source as the Internet combined with patron demands; the average library budget that is spent on electronic materials has increased almost fourfold, from an estimated 4% in 1992-93 to 13% in 1999-2000.

Ahmed, S. S. (2002) conducted the study of e-mail survey of seven Arabian Gulf university libraries in order to ascertain which types of Web-based services they offer to users. The study specifically looked at the provision to access Web-based services such as catalogues, search engines, forms, etc. through the respective library Web sites. Findings showed that almost all libraries are offering Web-based services to users in one way or the other. The study discussed the ways to improve and reinforce provision of such Web-based services, including effective methods of

creating awareness and delivering the orientation and training necessary to create a positive environment for change. The results of the study may be helpful especially to librarians of the Arabian Gulf libraries in enhancing or developing quality web-based services.

Li, L. (2006) explored the key issues involved with opportunities, challenges, and future developing trends of delivering dynamic and distributed web-based academic library information resources, services, and instructions for library users in the digital age. Based on the typical web -based, three-tier client/server architecture, this paper explores ten key issues on how to leverage quality library user services in the digital age: roles of academic libraries; funding support; information resources; information access; information services; instructions and trainings; impacts of cutting-edge technologies and emerging technologies; web contents management and knowledge base; assessment and evaluation and librarians. Also discussed are the next-generation web-based client/server library information architecture and services in the foreseeable future. With the rapid development of the internet and the World Wide Web, information exchange and information distribution can be transformed either by disparate formats or by dynamic channels.

2.2.3 INFORMATION SEEKING BEHAVIOUR

Al-Suqri, M. N. (2011) has investigated to use a questionnaire for study the models of information-seeking behavior that are based almost entirely on research conducted in Western countries and were generated at a time when electronic methods of information-seeking were still uncommon. This study develops an integrated model of social science information-seeking behavior based on a synthesis of established

models and tests the ability of this integrated model to describe present-day information-seeking among social science scholars in a Middle Eastern university. The data from the e-mail interviews, face-to-face interviews and focus groups are analyzed using qualitative content analysis. The findings also provide support for the inclusion in the model of additional dimensions relating to the format and location of information resources since these contextual factors were found to have an important influence on the process of information-seeking among the study participants.

Gaur, H. G., & Sharma, R. (2010) discussed the definitions, the factors of Information seeking behaviour and various models designed and proposed by the library and information scientists like Marchionini, Girja Kumar, Ellis, Wilson and Kuhlthau's model of ISB, Information Seeking through Internet (E-resource). Each model is being discussed in detail in order of the factor in the particular Information Seeking behaviour model. The suitability of these models depends on the factors like balance collection development policies, user education and training and offering specialised services.

Sethi (1990) found that respondents preferred journals, books, government documents and reference sources for meeting their information needs. The study also revealed lesser use of indexing and abstracting sources, book reviews, conference proceedings, dissertations and theses, newspaper clippings and other non-book sources.

Carol C. Kuhlthau (1993) has made an empirical study of students' information seeking behaviour in libraries and developed a general model of the Information Seeking Process (ISP).

Bane and Melheim (1995) investigated the use of Internet by academicians. Results of the survey disclosed that personal e-mail was utilized extremely often, more than once a week by nearly 90% of the respondents. Discussion groups were accessed more than once a week by 75% of the respondents. Electronic journals were accessed far less frequently more than once a week by 23% of the respondents. The survey also disclosed that many academicians were still not fully aware of available Internet resources and their applications.

Prasad (1998) has examined that in addition to journal articles, non-traditional literature such as unpublished conference and symposia papers, research proposals, policy guidelines and project reports are equally popular among the scholars. **Wilson (1999)** has described information behaviour, to be 'those activities a person may engage in when identifying his own needs for information, searching for such information in any way and using or transferring that information. **Pettigrew et.al., (2001)** have defined the information behaviour as the study of how people need, seek, give and use information in different contexts, including the workplace and everyday living.

2.2.4 HISTORY OF INFORMATION SEEKING RESEARCH

The earliest research on information retrieval began in the 1950s with what became to be known as the Cranfield Studies. Cranfield tests mark a historical change in consciousness from a philosophical and speculative approach to information retrieval system design to an empirical and experimental one.

A significant change occurred with the publication of the review article by **Dervin and Nilan (1986)** who identified the research shift from studying the system

to focusing on the information users and their searching behavior. To learn more about individual information seeking behavior, Dervin and Nilan also called for supplementing quantitative research methods with qualitative approaches.

Hjorland (1997) has noted the dichotomy of studying users' information seeking behavior from the information retrieval system. He felt that Information Science was studying these two areas in isolation from each other. Unfortunately there has been little research to tie these two areas together.

From the first thirty years of research an "implicit model" of information seeking behavior slowly developed. **Ellis (1990)** has described it as a user recognizing an information need and coming to an information retrieval system with a request based on that need. The retrieval system matches the request against representations of documents in the system. The task of the system is seen as that of presenting to the user the text or texts most likely to satisfy the user's need." The user then had the task of sifting through these recommended texts for items relevant to satisfying the information need.

2.2.5 MODELS OF INFORMATION SEEKING BEHAVIOUR

Marchionini (1995) has proposed a model of the information-seeking process tuned to electronic environments. In his model, the information seeking process is composed of eight sub processes which develop in parallel: Recognize and accept an information problem; Define and understand the problem; Choose a search system; Formulate a query; Execute search; Examine results; Extract information; Reflect/iterate/stop. **Wilson's (1997)** model of browsing and searching are also included in the model: undirected viewing, conditioned viewing, information

searching. Information behaviour thus can be defined by the general model of information behaviour developed by Wilson.

Chun Wei Choo and Don Turnbull (2000) have examined the information seeking on the web. They developed an integrated model of browsing and searching based on established research, specifically Ellis's (1989).

Ellis developed a behavioural model (**Ellis, 1993, Ellis, Cox & Hall 1993**) to better understand the information seeking behaviors of faculty members in the social and physical sciences. His model's purpose was to describe the information seeking patterns of his subjects (social scientists) and break the patterns "down into their basic behavioural characteristics." When the information retrieval system incorporates these behavioural patterns, researchers will find the retrieval systems easier to use; and adapt the systems to each individual's preferred style of searching for information. In another article, Ellis and his colleagues (**Ellis et al. 1993**) determined that the behavioral model could also describe the information seeking behaviour of physical scientists. The researchers concluded there were "no overriding differences between the two groups".

Combining his research on social scientists and that of his work with his colleagues' research on physical scientists, Ellis's behavioural model consisted of eight stages (**Ellis 1989 & Ellis et al., 1993**). The first stage was "Starting" which Ellis described as the "initial search for information."

The second stage was "Chaining". Ellis described chaining as following the footnote trail. As the faculty member followed the trail from citation to citation, the

faculty member created a chain of footnotes that led to the needed information.

“Browsing” was the third stage. Once the faculty member found a source or “area” that had useful information, the faculty member then began to browse the area or source for additional information on the topic of interest. The fourth stage was “Differentiating.” Here the faculty member began to sift through the discovered resources and filtered out the undesirable resources.

Ellis called the fifth stage “Monitoring.” Once the faculty member found a number of sources that met the information need, the faculty member then continued to monitor the field for new developments or additional information. “Extracting” was the sixth and final stage in Ellis’s initial model.

In their study of physical scientists while verifying the six – stage model, **Ellis et al. (1993)** added two additional stages to the model. These stages were “Verifying” and “Ending.” In “Verifying,” the faculty member attempted to check the discovered source for errors in data gathering, research design, statistical calculations, citations, and reputation of the author.

Ending occurred at the finish of a project when the faculty member returned to the literature for one last review to find any additional sources of information on the topic of interest.

These stages did not occur in the sequence or order given in the model. **Ellis (1989)** noted “The six features of the model [original model] together represent the major generic characteristics of the social scientists’ individual information seeking patterns, and any individual pattern can, therefore, be described in terms of the

features of the model.” The actual order of the behaviors in which a faculty member seeks information could vary depending “on the unique circumstances of the information seeking activities of the person concerned at that particular point in time”.

In his research with a Norwegian colleague, **Ellis and Haugan (1997)** used the same techniques as those used to develop the original Ellis behavioral model to conduct a study of a group of research scientists and engineers of a large oil and gas company. Ellis and Haugan’s study resulted in a behavioral model similar to the one used to describe the information seeking behaviors of social and physical sciences faculty members. Again, it was an eight-stage model. The eight stages were “Surveying,” “Chaining,” “Monitoring,” “Browsing,” “Distinguishing,” “Filtering,” “Extracting” and “Ending.” Ellis and Haugan described “Surveying” as the initial stage “in the beginning of a project’s life cycle to approach a new or unfamiliar subject field and is recognized as a method for planned information gathering among the researchers”. This “Surveying” stage was the equivalent of the “Strating” stage in the original model. The “Chaining,” “Monitoring” “Browsing,” “Distinguishing,” “Extracting,” and Ending” stage in the new model had similar purpose as those in the original model.

Ellis and Haugan held that “The decision to stop following a chain of references is usually based on the time available, while the chaining of personal contacts depends on the knowledge the persons possess, their willingness to give information and if they know the names of others who are more knowledgeable”. The “Filtering” stage in the new model was similar to the “Verifying” stage in the original model.

In his initial research and subsequent research with colleagues, Ellis did not include Internet searching as a major factor in the information seeking behaviors of

his subjects. In the initial research articles, the World Wide Web was just beginning to become available for use by faculty members. At the time of this initial research, the most likely on-line sources faculty members would use were online public access library catalogs ,commercial database search vendors and possibly E-mail. Even with his research with Haugan, the research scientists and engineers working for the oil firm rarely reported Internet activity.

Wolcott (1998) adapted Ellis's behavioral model and associated research methodology to the study of seventh grade students' searching behavior on the Internet. His findings indicated that Ellis's model and the classification scheme from [Wolcott's] study frames the protocols and produces an analysis that shows no overriding differences from the categorizations of Ellis. The characteristics of the information-seeking patterns were fundamentally the same. These seventh grade students "verbalized similar categories of research activities" as those that Ellis found in working with faculty members.

Devlin (1997) adapted the conceptual model of information retrieval to the process of choosing the Internet for satisfying information needs. From the conceptual model of information retrieval, Devlin developed a decision tree to determine when to use the Internet and for the best search strategy. Because of the chaotic nature of the Internet and the numerous unreliable sources accessible, Devlin cautioned that "The Internet should be chosen if the question is unlikely to be answered elsewhere, if other sources have proved unsuccessful or if a comprehensive search is required".

2.2.6 RESEARCH ON INFORMATION SEEKING BEHAVIOUR

Many of the articles and reports written on information seeking simply

described the types of resources and systems individuals used to satisfy their information needs and/or why they sought information. These types of articles and reports did not attempt to build models that represent the behavioral or cognitive processes involved in information seeking. The following review of articles and research reports presents a representative sample of this descriptive research into information seeking by faculty members and related groups.

Prior to the advent of easy access to the Internet resources, researchers often studied faculty members' usage of on-line and CD-ROM databases, on-line information vendors, library's on-line public access catalogs, and other types of electronic services.

Hernon (1984) examined information needs of social scientists in a pre-automated library setting and he concluded that social scientists will probably choose between one's personal collection, electronic or mass media (commercial information vendors such as Dialog), colleagues, or an institutional provider (library) to obtain any needed information.

Hurd (1992) and her colleagues examined the use of abstracts and indexes by scientists and engineers at the University of Illinois at Chicago. From their review of the literature, Hurd and her colleagues concluded that "scientists were found to rely more on informal communication with colleagues, attendance at conferences and references in journal articles than on secondary services as means of identifying the existence of relevant articles". The authors recommended that university computing centers and libraries reach out to scientists who were not presently using these electronic systems and resources.

The same group of researchers (**Curtis, Weller, & Hurd, 1993**) also studied the information seeking activities of faculty members in the health sciences at the University of Illinois at Chicago. Curtis and her colleagues concluded that “as new formats become available for accessing literature, the traditional formats for information continue to be used”. Faculty members continued to use “the traditional methods of asking a colleague, scanning a personal copy of a journal, perusing material in a departmental collection, and, of course, going to the library”. The most effective training sessions for faculty members were those that were tailored to a specific audience. The authors also noted that even if a university had a sophisticated computer system, not all faculty members would use this resource.

Guha (1994) studied the information seeking activities in six institutions of higher education in Delhi, India. “The Indian scientific community has also been carrying forward the same scientific tradition and hence have very similar information gathering/communication behavior” as their counterparts in other universities around the world. Their primary research sources were the traditional printed indexes and reference sources. There was virtually no use of on-line databases and resources. Their preferred method of keeping abreast of new developments was to “scan” tables of contents from the current periodical collections in the institution’s library. They also made use of abstracting and indexing resources as well as personal contacts.

Marchionini (1995) described information seeking in terms of two types of strategies: “Analytical Search” strategies and “Browsing” strategies. The concept of “Analytical Search” strategies involved a more formalistic approach to using information retrieval and database search engines. This type of strategy was more

“goal oriented” and involved a systematic use of system commands and operations to narrow large data sets into useful retrieved sets of information on the topic of interest. Professional information retrieval experts were more likely to use this approach to finding information.

Bao (1998) reported on the results of a survey of Internet users at Seton Hall University. Although there was only a small number of faculty members included (3.8%) in the total number of respondents, Bao found that Internet users at Seton Hall spent an average of at least 30 minutes on each Internet search session. When performing Internet searches, their most common problem was finding too many hits. The respondents also complained that they did not find enough full-text resources on the Web. In nearly half the cases, the searchers did not find the information they were seeking on the Internet. Bao was surprised that so few respondents made use of the library’s Web page. Most respondents reported they used a search engine or simply typed in an URL to search for needed information.

“Browsing” strategies involved more of the traditional serendipity approach to finding information. This approach was depicted as the faculty member wandering through the library’s book stacks seeking information while chasing the footnote trail of an article or monograph in hand. Marchionini described information seekers who used the browsing strategy as employing a “variety of informal, heuristic strategies” to find information. In an electronic environment, especially where on-line connect fees are assessed browsing could be very expensive, inefficient, distracting, and time consuming. Marchionini felt, “The key to using browsing strategies is selectively using them for appropriate problems and with those systems that best support it”.

Popoola, S. O. (2008) discussed the faculty awareness and use of library information products and services in South-West Nigeria universities. Systematic random sampling method was used to select 446 faculty members from a population of 4,459 in the universities. A questionnaire formed the major instrument for data gathering. The response rate achieved was 89.7 percent and the reliability coefficient of the questionnaire used was 0.72. The study found that there was a significant difference in faculty awareness of available library information products and services. In addition, they did not have sufficient knowledge of those library products and services pertinent to their teaching and research activities. The survey also revealed that the level of knowledge of faculty staff had positive relationship with the frequency of use, consultation with the librarians, faculty status and membership of library related committees. User education programmes coupled with planned public relations were recommended to improve faculty awareness of library information products and services.

2.2.7 VARIABLES INFLUENCING INFORMATION SEEKING BEHAVIOUR

Ram, S., K, J. P. A., and Kataria, S. (2011) has discussed the implementation of the innovative Web 2.0 applications at Jaypee University of Information Technology with the aim of exploring the expectations of the users and their awareness and usage of such applications. The emergence of digital technologies and information and communications technology (ICT) tools in libraries has encouraged the implementation of a wide range of applications, such as digital libraries, video on demand, reference services and database services into library services. The advent of next-generation web technologies, known

as Web 2.0 applications, has prompted a number of other pertinent services to be implemented to enhance the information literacy skills of the existing services.

Zimmerman, D., and Paschal, D. B. (2009) examined assessment of the effectiveness of the digital library and the value of multidisciplinary databases in terms of user preferences and frequency of use by academic ranking. The study presented the first case study in the field in Turkey that compared the current situation of the digital library usage with the initial survey data. It examined the level of awareness by academic staff of digital library resources along with their use rate and evaluated the preferences of faculty for specific electronic databases case studies were undertaken by means of separate questionnaires in both years. According to the results of the current survey, the most preferred databases have been Web of Science, Science Direct and EBSCO. When use of the electronic databases was analyzed, with respect of faculty rank and level of awareness, associate and assistant professors, assistants are ranked first.

Karen Williams (2009) has devised a framework for articulating new library roles. The framework redefined traditional roles (the “holy trinity” of reference, instruction, and collection development) and integrated the new roles that librarians increasingly find themselves occupying with. The framework has evolved to encompass ten vital areas such as campus engagement, content/collection development and management, teaching and learning, scholarly communication, E-scholarships and digital tools, reference/ help services, outreach, fund raising, exhibit and event planning and leadership. The ten elements of the position description framework articulated ten key roles for liaisons. Several new roles for libraries

include those of intermediaries and aggregators, publishers, entrepreneurs, policy advocates, and development organizations.

Tahir Masood Qureshi, Jawad Iqbal, Mohammad Bashir Khan (2008) in their study on Information Needs & Information Seeking Behaviour of Students in Universities of Pakistan concluded that there are several factors that have significant effect on students' behaviour. Among these, the leading factors are Educational & Cultural Background, Surrounding Environment and Student Participation, which have high positive impact on Information Needs and Information Seeking Behaviour of students.

Stephen Pinfield (2001) discussed the roles that subject librarians play in the contemporary UK academic libraries and he further discussed the traditional role of the subject librarians and analysed the way in which this role was changing. Those areas where the changing responsibilities are extensions of traditional roles into new areas are pinpointed, together with examples of where subject librarians are performing new roles and adopting new ways of working, which include greater emphasis on liaison with the users, advocacy of the collections, adopting new roles; dealing with user enquiries in new ways, working with technical staff, selecting electronic library materials and carrying out more information skills training in the implementation of educational technology. The study also presented practical examples based on experiences at Nottingham University and other UK research libraries.

An individual's knowledge about the subject and of seeking information online also influences which methods he uses to find information (**Kwong, 2002**) and

how successful he is in finding relevant information. In this sense end-users who have received formal training in information seeking may use different methods for finding information than those who have not (**Kuo *et al*, 2003**).

Nazan Ozenc Ucak and Serap Kurbanoglu (1998) reported that regardless of nationality, information seeking behavior is largely dependent on the type a scholar's discipline. According to **Wilson (1999)** information seeking involves uncertainty, which decreases as more information is gathered.

According to **Schmidt and Spreng (1996)** the end-user will perform an additional search as long as the marginal benefit of performing the search exceeds the marginal experienced cost. The experienced cost is described as a combination of an individual's access to information, degree of uncertainty and degree of pressure. They studied variables that influence end-users' information seeking patterns. Among these are personal variables, or internal variables that vary among different end-users, for instance, motivation, attitudes and experience, as well as end-users, personality traits.

David Farrell (1996) has brought out guidelines and methods of librarian-faculty communications at the Berkeley library, University of California, which contains guidelines and suggested methods for the effective communication between the two groups. These guidelines were again revised in June 2002.

2.2.8 RESEARCH RELATED TO ELECTRONIC RESOURCES USAGE

Bal Ram & Bhaskar Karn (2013) has discussed the awareness and utilization of e-Resources and UGC-INFONET consortium in the users of Universities of Jharkhand in Eastern India. Concept of e-resources apart from this

paper also covers the consortium in Indian context in brief. Today the value of Information and users need have increased enormously so much, no single publisher or institute fulfills their need. So that important of consortia is much more. The E-journals are becoming famous for research community as well as easy to use and consistent also. The electronic resources make the e-learning operative which advances the attention among the students as well as staff and encourage them for independent learning.

Gomathi. P (2013) has analyzed the usage of UGC-INFONET E-Journals Consortium by the faculty members and research scholars of Periyar University, Salem, Tamilnadu UGC-INFONET E-journal consortium is a memorable project in the history of academic community and users in India. All academic institutions, which come under the preview of UGC, are members of this consortium. It is the largest academic consortium in India monitored by INFLIBNET. It is subscribing e-resources of high quality collection of more than 4000 full text E-Journals, Indexing and Abstracting databases for the benefits of millions of users in India, from twenty five different publishers to the academic community, comprising of faculty, staff, researchers and students.

D.D. Lal (2012) has described the DBT's Electronic Resources and the approach can be considered as a major step towards library collaboration in sharing electronic resources. In the current era of Information Technology the information needs of the users have increased considerably that no library individually can meet all the information requirements of the users. The information needs required the need

for efficient association and collaboration between libraries and information centres for sharing their available resources and information through networking.

Mustafa H. Ahmed and Raid Jameel Suleiman (2012) have discussed the reality of establishing a public university libraries consortium in Jordan. The current financial and managerial difficulties that are encountered by libraries in public universities in Jordan and the geographical diffusion of these academic institutions, the idea of establishing a consortium was proposed by the Council of Higher Education to combine these libraries. The author found consortium enriches the digital governmental university libraries network with information sources through a sharing mechanism. This mechanism allowed for the consortium to coordinate database subscriptions and to act as a lobby group when dealing with library vendors in an attempt to economize in subscription costs.

Sami Cukadar, Ayhan Tuglu & Gultekin Gurdal (2012) have explained how the new system was developed, its technical features, data entry and collection, the system's contribution to the collection of institution and usage statistics and its impact on strategic planning. Available statistical facts are also provided to illustrate the development and the impact of the new ERM (Electronic Resource Management) system. The Anatolian University Libraries Consortium (ANKOS), which was originally established to coordinate university libraries' electronic serials purchases, today plays an active role in selecting, providing access to, managing and evaluating electronic information resources in Turkey.

Csajbok, Peter Szluka & Livia Vasas (2012) has explained the Library Consortia's in Hungary. Some of the modernization of library services has been

realized through participation in cooperative agreements. Many smaller and larger consortia have been organized in Hungary since 1991. During the last two decades many Hungarian libraries have developed considerably, beyond what was considered possible prior to 1989 and the beginning of events signaling the end of Communism in the country. IT infrastructure and access to resources are greatly improved but the ability to maintain the improvement is questionable. Librarians are more knowledgeable about finding funding opportunities and managing programs. Challenges remain, of course, but consortia may still play a vital role in library development in Hungary.

Fry, A., & Rich, L. (2011) discussed in early 2010, library staff at Bowling Green State University (BGSU) in Ohio designed and conducted a usability study of key parts of the library web site, focusing on the web pages generated by the library's electronic resources management system (ERM). The work recorded and detailed the library's databases. The goal is to discover how far users could find and choose e-resources and identify ways, that the library could improve access to e-resources through its web site. The usability study conducted at BGSU, presents its conclusions about how students at BGSU find and choose databases and contextualizes these findings with other current research about user behavior and further it makes recommendations for increasing the students use of library e-resources.

Okello-Obura, C. (2010) described that the part of the study conducted to analyse the LIS postgraduate e-resources seeking behaviour in Makerere University, Uganda. Its purpose is to the problems LIS postgraduate students' face in accessing e-resources. Survey research techniques were used in which the data collected using

structured questionnaires were carefully handled and analysed using the Excel Computer Program to generate the frequencies, percentages and pie charts. The problems identified are: slow Internet connectivity, inadequate networked computers, lack of access to low cost printers in the library, using advanced search strategies of most databases and lack of awareness of most of the e-resources. This study has helped the library planners and LIS educators to rethink on how to improve on e-resources access and utilization. It would certainly provoke new thinking to revamp the situation in the University library.

Bhatt, R. K. (2010) focused to determine the needs of research scholars and faculty members of University of Delhi in the discipline of history and political science and to find out how far their information needs are fulfilled by the information resources available through UGC-INFONET Digital Library Consortium. It attempts to define this consortium, its objectives, scope, e-resources subscribed and the government initiative to provide current information in various disciplines for research and teaching excellence. To study the information usage pattern and needs of the respective users a survey was conducted among faculty and research scholars. The population included in the study comprised 105 respondents from both departments and of that, eight are faculty and 97 are research scholars. The study tangibly explains the genesis, e-resources facilities and usage of e-resources available through UGC-INFONET Digital Library Consortium (a University Grants Commission of India sponsored consortium) to provide e-resources and current information in various disciplines. The scope of the study is reflects the users' awareness regarding the consortium resources available in the respective fields, information about important databases and e-journals, search techniques, recurring usage for information and

knowledge, help and support in research output and teaching activities, benefits accrued such as saving of time, effort and the problems faced.

Ebrahim Emrani, Amin Moradi-Salari and Hamid R. Jamali (2010) have analyzed the usage data of Elsevier Science Direct journals for the period of 2004–2009 by Consortium, an Iranian national consortium with fifty-eight institutions. The aim of the analysis was to develop a license model for subscription purchases. The results show that journal use followed the “80/20 rule” or Pareto principle. The conclusion is that, for a cost-benefit license model, institutions should be grouped into three or four categories based on their subject fields and amount of use. The author also discussed the problem with usage data and highlights the need for implementing a system to locally collect and analyze usage data rather than relying on the usage data provided by vendors and publishers.

Jagdish Arora and Kruti Trivedi (2010) have analyzed the higher education system in India. The UGC-INFONET Digital Library Consortium, launched in 2004, provides 5790 Journals to 160 universities. This article discussed major activities, services and operations of UGC-INFONET. It briefly discussed major items of negotiation, resources subscribed, terms of license, access management technologies, core member universities and associate members etc. This article reveals committees, participating universities/institutions and their roles, governing structure. It describes on methods used for promotion of e-resources. This article elaborates the economics of the UGC-INFONET Digital Library Consortium, implementation of college consortium and future endeavours. UGC-INFONET provides access to scholarly electronic Journals and databases.

Sampath Kumar, B. T., & Biradar, B. S. (2010) have examined the use of Information Communication Technology (ICT) in 31 college libraries in Karnataka, India by investigating the ICT infrastructure, current status of library automation, barriers to implementation of library automation and also librarians' attitudes towards the use of ICT. Data-gathering tools used included questionnaire, observation and informal interview with selected college librarians. Application of ICT in Indian college libraries has not reached a very high level. Lack of budget, lack of manpower, lack of skilled staff and lack of training are the main constraints for not automating library activities. Even though library professionals have shown a positive attitude towards the use of ICT applications and library automation, they need extensive and appropriate training to make use of ICT tools. This is a comprehensive study on the use of ICT in Indian college libraries. It should help college librarians, local government and also the University Grants Commission, New Delhi.

Haridasan, S., & Khan, M. (2009) have presented the fact that electronic resources are a significant part of library collections. A large amount is invested in the development and management of e-resources in the libraries. The study aims to identify the acceptance of e-resources in the National Social Science Documentation Centre (NASSDOC) library in New Delhi, India and determine their usage, performance, degree of user satisfaction and barriers faced in the access of e-resources. It also attempts to find out the users' views about computer literacy among the social scientists. The study focuses on the impact and use of e-resources by social scientists pursuing research in the NASSDOC library. The data were collected from the entire population of social scientists at NASSDOC through a questionnaire accompanied by personal interview. This was further analysed using statistical

techniques and percentages to arrive at qualitative and quantitative results. The major findings of the study indicate that respondents are aware of the e-resources (such as e-books, e-journals, e-encyclopedias, e-theses, CD-ROM databases, e-mail, internet and the OPAC). Large numbers of research scholars and faculty members are using these e-resources for their research work. Many faculty members strongly agreed with the necessity for computer and internet literacy to access information. A majority of users were satisfied with the e-resources available at the NASSDOC library. This is one of the first surveys conducted to identify the need and importance of e-resources in a specific Indian library (NASSDOC) as well as the requirement for information literacy to enhance the use of available resources in the social sciences. It should pave the way to showing the value of such e-resources for scholarly research in India.

Patil D, B & Parameshwar S (2009) made a survey on "use of electronic resources by the faculty members and research scholars in Gulbarga University, Gulbarga. The objective of the study was to find out the awareness about UGC Infonet consortium, the search strategy adopted to find the relevant information and the satisfaction level. The study revealed that 73.27% of respondents searched information by e journals, 81.86% of respondents still continued to use print journals, 9.79% did not know how to access e- resources through UGC Infonet consortium, while 37.95% got assistant from the library staff to access the e- resource through UGC Infonet consortium.

S.S. Joshi & Vinod Kumar (2009) have discussed the consortia meaning, need, advantages, disadvantages, models and various initiatives in India. The increase in prices of the electronic resources and scarcity of resources has forced the libraries

to explore the alternative means of subscription. The revolution in information technology in past few years has surpassed the ability of individuals and institutions to cope with it. Expectations of the users from the libraries have also increased rapidly. The phenomenon of consortia has become very important in the last few years.

Rubina Bhatti (2009) attested that interpersonal relationship plays an important role in establishing liaison activities among students, teachers and librarians as the study made an assessment of the interpersonal relationship among student-teachers-librarians in the university libraries of Pakistan. The study covered ten university libraries of Pakistan. The information could be useful for the librarians and information specialist for developing positive working relationship. Librarians could play their role effectively in educating the users to wealth of information contained in Pakistani university libraries. The study also points out that the interpersonal relationship plays a major part in developing attitudes towards library services and user education and particularly liaison aspects.

Lucia Cedeira Serantes (2009) indicates that the research produced in other fields, such as communication or computer science, the way young adults interrelate with new technologies and the need for collaboration between practitioners and researchers justifies and supports the use of a critical perspective to analyze the suggested topic. The call for a critical approach to technology is certainly not a novel suggestion in the LIS scholarship, however, its resurgence is extremely relevant for the LIS field because of the significant role that technology is playing in the daily life of the library and its users.

Baljinder Kaur and Rama Verma (2009) made a study on "The use of E resources: A case study of Thapar University, India". The study aimed to find out the preference of place for access to electronic resources by the research scholars. The findings are that users access e- resources more from the hostels and computer centres in the library. E resources are use of library has decreased because information is easily uses through internet and intranet connectivity provided by their institutions.

Resnick, T., Ugaz, A., Burford, N., & Carrigan, E. (2008) libraries spent increasingly large amounts on electronic resources (ERs), but may not have adjusted staffing to support these resources. Assisting users with ER access problems is complex due to the many reasons a resource may be unavailable at a particular time. The objective of the work is to describe the evolution of a library ER problem-reporting help desk. A pilot project was undertaken by librarians at the Texas A&M University Libraries to redesign workflows and staffing to provide an efficient, effective help desk service for solving ER access problems. Including librarians with experience in licensing and managing ERs in providing help desk services improved response time, problem resolution, systematic information capture, and service expectations and policies, and also led to the development of an ER Helpdesk database with enhanced functionality. Delegating ER problems solely to information technology (IT) staff may seem reasonable but assumes technology as the source of several problems; it is likely that the user, the resource, or a non-computer-related issue be the source. Librarians whose traditional responsibilities include supporting user access were effective in providing expert assistance with access problems. Cooperative efforts of librarians and IT staff are necessary to ensure reliable ER access.

Zhang Y (2008) scrutinized the scholarly use of internet based electronic sources. The objectives of the study were to analyze the use of internet based electronic resources by a group of library and information science scholars. It focused particularly on how scholars used, cited, and evaluated the e- resources. The research also explored the problems encountered while searching for information for research.

Prem Chand & Jagdish Arora (2008) has described the initiative of the University Grants Commission of India in setting up the INFONET Digital Library Consortium (The Information and Library Network) in order to provide access to scholarly communication to the academic community in India. The context of higher education in India and the expansion and establishment of universities under the five-year plan is given along with details of e-resources that are being provided. The usage trends of e-resources from various publishers during 2004-2007 are detailed. The authors found that there has been a qualitative increase in overall usage, but use is also dependent on a high-bandwidth connection.

Nayana Darshani Wijayasundara (2008) developed a Conceptual model on faculty-library collaboration for the University of Colombo. Faculty-library collaboration is a process in which lecturers and librarians work together to integrate information in order to enhance student learning. The model ultimately supported to strengthen and enhance the existing relationships. The main factors examined in the model are 1) Personal traits – positive attitudes, positive relationships, mutual respect 2) Knowledge and skills-competence, teaching techniques, technological skills, Proactive communication and listening; 3) Organizational facts – Goals, size of the university, adequate staffing and infrastructure facilities; 4) Teaching and Learning –

Development of course syllabus, curricular revision, development of assignments, team teaching, increased innovation, increased reflection and increased motivation; 5) Research – collaborative efforts, improved literature reviews, collaborative publications, grant writing and 6) Usage of the library : increased resources, improved services, high quality products & services, web page design and collection building.

Ti yu (2008) described a new model of faculty-librarian collaboration: the faculty member as library specialist to the Jinwen University of Science and Technology (JUST) for the purpose of developing collaborative approaches, between the teaching faculty and librarians in this model/project is described as follows : the faculty help students who have subject specific information needs, integrate library resources into courses, organize book clubs, the faculty provide consultation to the librarians on collection development and provide students with e-portfolio skills. The model of faculty member as library specialist is a model for collaboration and the best way to promote the library's services and resources.

Shamin R (2008) has studied the use of electronic information resources by medical science faculty at the universities of West Indies. The objective was to study the faculty's knowledge of electronic resources access to a computer, use of electronic resources available at the Medical science library and the areas of training needed, and to identify areas for further research.

Shuling, W. (2007) has discussed the electronic resources become the library's important storage of a university library, and the fund purchased electronic resources also increased quickly, year after year. In order to find out the readers' present conditions, difficulties and requirement of using e-Resources, The Library of

Shaanxi University of Science and Technology, carried out sampling, questioning and investigating of all teachers and students at campus. The investigation was carried out in at the campus, and the investigative target involves teachers, scientific staff, grade, graduate students, scientific staff, undergraduate students and some training students from 15 institutes in the whole university. It centered on seven subjects, 24 question designs and 155 selective answers and everyone was multilateral, 1,000 questionnaires were sent out, 909 reclaimed. The ratio is 90.9 percent. The investigative result showed that: nearly half of the readers investigated were satisfied with e-resources of the university. At present, the main way that readers obtained rebases or literature is from traditional library storage. This illustrated that the printing literature obtained play 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 occupy the greatest majority. It also shows the use of reading on screen, non-familiarizing the structure and the retrieval method. It has analyzed the consciousness of using e-resources, and the ability of obtaining literature for university readers, by investigating some readers' utility of e-resources at Shaanxi University of Science and Technology. By angling the result, it supplies theoretic foundation of e-resources' order, storage's construction and readers' serve.

Rebecca Molineaux (2007) focused primarily on teacher/librarian collaboration, especially focusing on the benefits of collaboration and how to prepare and plan collaborative projects. A reproducible project planning guide is provided. In addition, it described the roles of today's library media specialists including a discussion of their role in promoting reading among information literacy instructors.

Abul K. Bashirullah & Xiomara Jayaro (2006) have explained the Venezuela country Consortium and services. Most of the University libraries in Venezuela were neglected entities with scattered funds and disorganized services during the 60s through the early 90s. University libraries were not structured as a system but libraries used to subscribe to sufficient serial publications prior to 1982 due to the strong currency. The aim of forming a national consortium is to share resources, create efficiency, cost savings, and to promote participation on the basis of mutual benefit. The goal of cooperation is to join users and information they need, establishing relations among participant institutions is a critical means to that end. Consortia allow the testing of alternatives to traditional library individual subscription processes. They offer the potential to offer the best library services to wider number of users, in particular with the introduction of an inter-library loan system and the establishment of a national catalog.

Ali N (2006) has worked on the use of electronic resources at Indian Institute of Technology library in Delhi, India. The study attempted to find out the use of electronic information services among the users of the Indian Institute of Technology Library. 300 samples were collected in IIT library itself. The objective of the study was to know about the awareness of Electronic information Service (EIS), use of e-journals, advance search facilities and the problems in usage of such information.

Anne E. McKee (2005) has discussed the history of consortia as they relate to the library marketplace and examined the issues and trends facing consortia today. Negotiation tools which can help in obtaining fair and equitable content agreements would be highlighted. As consortia have become much more complex (multi-type

versus single; “buying club” focused versus those with a focus on impacting scholarly communication), it becomes a daunting process to effectively meld the needs of each member institution. Consortia fill a very real, basic need for both their members and for the publishing market. Through consortia, resource sharing and new trends in scholarly communication have been instituted and libraries and publishers realize that utilizing consortia can be a win-win situation for all.

Jeff A. Steely (2004) has described the open source software movement as a form of resource sharing and examined the possible benefits of using open source products in resource sharing operations. A sample of open source applications designed for resource sharing is supplemented by a list of several other applications that may interest resource sharing librarians. Readers can then imagine what a “gourmet” resource sharing system might look like. This article also suggests some possible steps for developing such a system. Resource sharing librarians can choose to buy the closed source products that are currently available and then depend upon their vendor’s enhancement processes to add the additional features that libraries need. For those resource sharing hackers who are not satisfied with this type of dependency, however, it is time to get in the kitchen to whip up something new.

Jane M. Subramanian (2003) has discussed about the Consortia and cooperative efforts in the library world. As the twentieth century has progressed, consortia have become even more important and the extent of their roles has broadened considerably. In the last few years, they have become large players in helping libraries build shared online catalogs and assisting libraries in affording purchases of electronic resources, both important elements of support for distance

learners. As the number of distance learners increases at colleges and universities throughout the country, consortia will be increasingly important to library support of distance learners in their information needs. As distance learners become more and more prevalent in his institutions of higher education, the need for cooperative ventures in terms of resource sharing to support distance learning makes tremendous sense.

Pierre Le Loarer & Jean-Michel Salaun (2002) made an elaborative study on local collections, licensed collections, free collections and suggested the ways to manage in collaboration with other libraries. A project called MANUM (is an abbreviation for “des manuels numeriques pour le premier cycle” which means handbooks for undergraduate students) was prepared with an aim to give undergraduate students in social science an easy access to digital sources: How to offer electronic sources to meet the students’ needs. The project aims at testing the validity of defining the modalities namely Editorial, Educational, Technical, Economical and Legal. The MANUM project was divided into two phases. The first phase studied the evolution of the publisher world in the academic field. The second phase concerned with the existing practices of students and teachers for their classes and suggested ways for the librarians to interact and negotiate with the publishers or aggregators in the new electronic offer.

Paul E. Dumont (2002) has made a study on the resource sharing of Libraries in Texas. The libraries in Texas have long history of developing multi-type agreements for resource sharing. The leadership of the Texas State Library and Archives Commission, academic libraries and the regional consortium Amigos has

led to the creation of TexShare. This article cites a few of the many examples of multi-type library consortia and partnerships from all over Texas. The most important legislation in 1995 created the Public Utility Regulatory Act of 1995 which in turn generated the Telecommunications Infrastructure Fund (TIF). The role that libraries play in the education and economic development of Texas has grown with its population. TexShare, TIF and the Library of Texas initiative will enable academic institutions, libraries, homes, and workplaces to share a wealth of electronic resources. Strategic partnerships and consortium development would continue to play an important role in the future of Texas libraries.

Wil Weston (2001) has discussed the resource sharing is a natural step in the evolution of our modern libraries by illustrating the need for increased cooperation among libraries. As scientific disciplines become increasingly holistic, the process of interlibrary lending and borrowing becomes increasingly important. Growing periodical cutbacks also strengthen this new important role that is filled by resource sharing. This shift places a heavier emphasis upon collection management as opposed to collection development.

2.3 INFERENCES

An assessment of the literature on several features of the study provides an understanding of the following:

1. A total of 94 related previous studies on the broad area have been covered related to the use of electronic resources of selected university libraries in Kerala of this chapter.

2. The researcher has studied the research related articles during 1978 to 2013 from various sources; such that journal article, conference proceedings, unpublished Ph.D thesis and internet sources.
3. The studies on library networks have been grouped and presented under the following heads like: Information necessitates; available information sources; Information seeking behavior; models of information seeking behavior; research on information seeking behavior; variables influences information seeking behavior; history of research on information seeking and research related to electronic resources.
4. The developed countries are in a better position for servicing electronic resources and accessed by the end users, because of their good set-up of libraries to adopt new ways and means, i.e., the technology to accomplish their goals successfully, whereas the developing countries are in a disadvantageous position in the absence of a similar setup and the existence of many drawbacks. However, efforts are under progress to improve the situation
5. India being a developing country has similar problem. Nevertheless there has been considerable progress in library automation and networking for resource sharing.
6. It is also noticed that most of the study has been empirical study in the concept usage of electronic resources by the end users.

Therefore the present study bridges the research gap and proposed to conduct the “USE OF ELECTRONIC INFORMATION RESOURCES IN UNIVERSITY LIBRARIES IN KERALA: A STUDY ON USER POINT OF VIEW”

2.4. EMPIRICAL REVIEW

Majority of the study focuses on the use of internet in academic institutions in schools and colleges. The survey method was adopted for the study and random sampling techniques were used to select the sufficient for the study. Multivariate

analysis, regression and correlation analysis were used to analyse the data. The review of related literature of both Indian and foreign studies has revealed that very few attempts have been made to study electronic resource usage among University faculties and research scholars. Hence, the researcher has made an attempt to study the “USE OF ELECTRONIC INFORMATION RESOURCES IN UNIVERSITY LIBRARIES IN KERALA: A STUDY ON USER POINT OF VIEW.”

2.5 CONCLUSION

The literature has given an insight to the research carried out in the related fields of study. Further, it has helped to identify the research gap among the university libraries of various parts. The researcher identified that the technological change affects library staff and there is a need to develop guidelines and policies to train the professionals in providing frontline services of the Universities. More consortium based resource sharing is to be activated in the university libraries. As the universities are concentrating more on research, the e- resources play a vital role in updating the knowledge of the scholar and to preview for the new focus to their study.

Past study helps the researcher to know the tools and methods applicable to the study. Majority of the studies are conducted with the help of questionnaire survey and personal interview. The literature survey has also revealed that most of the studies are related to the usage of electronic information resources. To identify some difficulties and to clear off the scarcity of e- resources, this study attempts the status of existing situation and provides a solution to increase the e- resources services by the university libraries.

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