Chapter - II

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Chapter - II

REVIEW OF LITERATURE

2.1 Introduction

The existing review of literature is the starting point for any research study that assists the researcher to identify previous and present research works, and provides vital information in understanding the theoretical and methodological issues surrounding the research objective. Therefore, the investigator has conducted a detailed search and review of literature. Though it is not possible to provide a very comprehensive review of all the articles dealing with various aspects, an attempt has been made to highlight some of the significant literature about user studies, Information seeking Behaviour, information resources usage and related issues.

2.2 User Studies and Evolution

Since the objective of this study is more of user study, it is important to understand what a user means. The ‘user’ is the key person in any information system and all aspects of such information are centered on the user. It is also important to understand from user point of view the success of any system, how close and accurate it is understood and used, for continuous improvement in improving the system, understanding user is an important activity.

Shaw (1956, 1971) in his study surveyed 105 research scientists of US Forest Service to describe the nature and purpose of all reading-acts over two months and surprisingly found the questionnaire-method superior to the diary-method of investigation. Menzel (1966) was one of those researchers who saw the potential usage of alternative user-research methods. Warner et al. (1973) carried out a study on the information needs of citizens in Baltimore. Wilson’s (1981) observations on user
studies’ and within user studies the investigation of ‘information needs’, he adds, has been the subject of much debate. He attempts to define some concepts, and proposes the basis for a theory of the motivations for information-seeking behavior.

Derwin (2003) described the increasing chaos of human studies and user studies. Dervin and Reinhard (2006) reported on the research phase of a multistage dialogue examining convergences and divergences in how three fields (Library and Information Science, Human Computer Interaction and Communication and Media Studies) looked at users and each other.

Karunanayake (2007) discussed the need for user studies for libraries in the current electronic environment where libraries are faced with new challenges brought about by the digital revolution and the rapidly developing new information technologies. Sato (2008) pointed out that it is crucial to evaluate the library service from customer’s point of view and understanding customers become indispensable.

Choi et. al (2012) This study investigates on an empirical data set collected from Chinese tourists visiting Macau SAR, attempts to reconstruct the travel decision – making process into a multistage sequence (before purchase, at time of purchase, after purchase, after arriving destination) with multiple decision choices for a vacation trip, the study results demonstrate that travel decision making follows a multidimensional, ongoing sequence and is a hierarchical process. Further attempts to expand the framework for describing the travel decision–making structure by incorporating information use patterns across the overall course of the travel planning process. The contingent nature of decision making is partially validated by tracing the sequence of decision making and information use along the travel planning horizon. Furthermore, given the lack of studies based on Chinese tourists’ decision making behavior, the study results provide new insights for many tourism destinations and business eyeing the burgeoning Chinese tourists market.
Ucak (2011) illustrated some of the characteristics of scholarly communication in the arts and includes a citation analysis of theses written between 1983 and 2007 in the Faculty of Art at Haceteppe university, in Turkey. It shows how students studying for a master degree or proficiency in art make use of resources in both Turkish and English, drawing primarily on books and monographs a common pattern in Humanities disciplines. Humanists, especially artists are a neglected group in information use studies. There is a deficit in the number of studies on information behaviour of artists and little consequences in their findings Cobbledick suggests that although artists makeup a significant proportion of the educational professional class in the US, their information needs are somehow neglected. This prevents librarians from identifying the information needs of artists, creating problems in designing information services for them. In order to identify the information use characteristics of artists and the difficulties they face in information retrieval there is a need for detailed user studies. The majority of what research there is on this subject is based on data collected by polls, inquiries and interviews conducted with artists. However, these data need to be supported even further by bibliometric research conducted especially to reveal how scholarly communication takes place in the fields of arts. This study therefore features the results of a citation analysis which sheds light on scholarly communication in the field of arts.

Thanuskodi (2010) described the ongoing work which involves examining the information use pattern of the legal professionals of District Court. The findings indicate that practicing lawyers were using a variety of information sources to satisfy their information needs. Respondents preferred to first consult their personal library before re-sorting to other information providing sources and agencies. This group of district court lawyers often found it difficult to find the information they were looking
for when using digital law libraries. The study observed that a majority of respondents were not aware of e-resources, on the whole, respondents perceived that the district Bar library collections, services and facilities as adequate to meet their information needs effectively.

Tripathi and Kanungo (2010) analysed the output research published in Indian Journal of Open Learning (IJOL) from 2000 to 2009. The article analyses the content published in IJOL along the parameters of citation analysis, geographic diversity, authorship pattern, research methodologies used, most popular areas among the researchers and gaps which need to be worked upon. These parameters or variables have been used in various studies published earlier; findings of the present study have been compared with the previous studies. It analyses the citations appended in the articles published in the IJOL (vol. no. 9 to 18) to determine the information use pattern of the researchers in the area of open and distance education. The study has covered 2929 citations appended in 204 articles authored by 335 contributors. The study attempts to explore the information seeking behavior of researchers in the discipline of distance education. It is expected that the study will stimulate researchers to profile other distance education journals and conduct comparative journal studies.

Reijo (2009) conducted a comparison study about their information use by comparing conceptualization provided by the constructivist approach and the human information processing approach. The article is a conceptual analysis of major articles characterizing information use and human information processing in the fields of information studies and consumer research. It is found that both research approaches share the assumption that interpreting, relating and comparing qualities of things is fundamental to the information use process. The picture of information use process is based on the comparison of two research approaches only. Compared to the numerous
studies on information needs and seeking, the question of information use have remained under-researched. The study elaborates the conceptual picture of information use processes by identifying similarities and differences between two major research approaches.

Pors (2008) conducted a nationwide online survey on sample of high schools in Denmark. The data collection was conducted in several steps. A sample of high schools was selected and asked if they would accept the opportunity to participate in the study. The findings indicate that traditional demographic factors alone cannot explain all of the variability in the students information behaviour type of high school gender and study year influence the use of libraries and digital resources, but it also becomes clear that perceptions of the study and study preferences influence the information behaviour it is also indicated that high school students poses a rather traditional view of the importance of the different services and facilities offered by libraries. This paper reports the findings of a comprehensive national survey investigating high school students and their use of information resources and libraries. The background of the research was conducted in cooperation with the National Library Authority in Denmark starting in 2005 with an investigation into students at universities and other higher educational institutions. This research roused much interest and some of the main findings influenced the national strategy for library and network development.

Rochna (2002) presented his views on information use in gender and development, the progress of any subject is impeded unless new knowledge generated by research flows freely, quickly and timely among user community. An information system, therefore, must bring into attention the newly generated information to the users as soon as it is generated because nascent information by its very nature is
perishable. Assessment of reading habits of its users is an important task of any efficient information retrieval system so that information needs of its users may be identified and the information available in different types of formats and through a variety of channels may be provided to the users. Reading habits of scholars in any field depends both on their personal characteristics as well as characteristics of specialty in which they work. Through personal characteristic of scholars is one of the important factors which contributes towards reading habits, subject characteristic also have definite impact on reading habits of scholars in any field. It has been noticed that the larger is the amount of material to be examined in order to keep abreast of recent developments. It is because of this reason; any person working in any interdisciplinary field has to read a great deal.

The amount of reading done by scholars have wide variations, while some of them may be highly literature oriented others may not be. The amount of reading varies substantially not only among the persons working in different disciplines but also among those working in the same discipline. The factors responsible for such variations have been identified as education, research experience, age, motivation, intelligence and persistence. But age and seniority have more influence on the reading habits than other characteristics. Many surveys have revealed the fact that the older scientists make less use of literature than the younger ones.

Jid, Anwar and Eiseneschitz (2001) This study investigated those factors that contribute positively in shaping users perceptions of library effectiveness. A questionnaire-based survey of five major agricultural libraries in Malaysia was conducted. It was found that the adequacy of collections, services and facilities were closely linked to the perceptions of library effectiveness. Certain other factors contributing positively to the perception of library effectiveness were the adequacy
and effectiveness of library promotion, involvement of users in the selection of library materials convenient library location, participation in user education programmes, availability of assistance for using library resources and facilities and subject background of library professionals. The paper suggests that for any reliable library effectiveness study, all factors associated with user satisfaction should be investigated together.

Niongmeta and Ehikhamenor (1998) report results of a questionnaire survey of the needs for information and its availability to 200 health professionals in Cameroon. They reveal need for health information for the purpose of current awareness, diagnoses, effective patient management, and about new drugs, while informal channels of information such as discussion with professional colleagues and allied health specialists, seminars, workshops and conferences have been quite useful, printed sources are indispensable and the high cost of information materials and the non-availability of effective information systems in Cameroon are serious constraints to accessing and using health information. The study argues that the starting point for addressing the problem of health information services would be the articulation of a health information policy as a vital component of health care delivery at all levels of the healthcare system.

Reddy and Karisiddappa (1997) found the result in the study conducted on Information Seeking Behavior of 160 professionals in the field of disability, by using questionnaire method of survey that the high percentage 52% to 73% of them preferred informal channel such as discussion with colleagues and conference meetings in contrast to 7% to 50% of the group who relied on formal channels such as abstracting and indexing services and subject bibliographies
Blom (1981) stated that in the development of a theoretical model a different approach has been taken from previous user studies, which were primarily aimed at gathering data on user preferences and their information gathering behaviour. Boon (1984) described library and information science as a study of the information transfer problem. Following the introduction of information technology, the information worker is now able to face the information problems with new perspectives.

2.3 Information Need and Information Seeking Behavior

The information seeking behaviour and need of the researchers (users) in the electronic environment has become complex, demanding and very challenging, information needs are dynamic and changes from person to person. Many studies have been attempted to introduce ideas for dealing with information needs, seeking and searching within scholarly communities. There are still a few researchers who follow a conventional approach in storing/using the information, across fields they have practiced in the early stages of digital information availability. Even though the information and communication technology has propelled the usage of electronic information resources to a large extent, some users are still inclined to print resources or informal channels to get information. Studying information needs and behaviour has become a veritable strategy to establishing exactly how to meet human and organisational information needs, and many models have already been developed in this regard. In support of this emerging consciousness, many researchers have examined the information needs and seeking behaviour of particular groups in an effort to enhance information provision to the groups. This observation aptly applies to the university, which is a complex system of academic/teaching, non-teaching and business activities. A
number of studies on the use of electronic information resources for scientific communication emerged and are discussed briefly here.

Malmsjo (1955) examined why knowledge of user needs is not used to develop information systems, while aiming to identify the features of user needs which should be noted. Crawford (1978) discussed concepts of information needs and uses, methodology of use studies, review of use studies between the periods 1975-77, and how information is used in government policy making and applied sociology. Joshi (1982) described the efforts by information scientists to supply the information to potential users, with the emphasis on SDI service as developed at the BARC.

Llull (1991) says that Information needs of students and those of the researcher are different. Horizontal organizational structures, emphasis on the team concept, and the electronic library environment come together in a synergetic way to assist librarians in providing informational services in an environment of conflicting priorities. Klobas (1993) discussed factors that influence discretionary use of electronic information resources by general users, as distinct from information specialists. Klobas (1995) says that the product quality of electronic information resources can be judged by the accuracy, currency relevance and ease of use. Resource use is better explained as a function of fitness for purpose, i.e., the extent to which the information resource is of appropriate quality for the situation in which it is to be used.

Okiki and Asiru (2011) studied the factors that influenced the use of electronic information sources varied according to their program of study and need to carry out research to excel in their academic endeavor and versatility in the use of information technologies to search for information.
Hurd et al. (1992) explored the use of major abstracting and indexing as part of the information seeking behaviour of the science and engineering faculty. Seggern (1995) pointed out that scientists rely heavily on informal communication and personal collection for information seeking and literature survey is often done through references in journal articles and other primary literature. Fu (1996) defines scientific communication as the use and dissemination of information by scientists through formal and informal channels. Rahman and Binwal (2000) studied the usage pattern of scientists and technologists in Bangladesh and found that the socio-economic background variables influence the use of libraries and information centers.

Wilson (2000) described information behaviour as the totality of human behaviour in relation to sources and channels of information, including both active and passive information-seeking, and information use. Information seeking behaviour is a purposive seeking of information, as a consequence of a need to satisfy some goal. Information seeking behaviour is the micro-level of behaviour employed by the searcher in interacting with information systems of all kinds, be it between the seeker and the system, or the pure method of creating and following up on a search. Convenience of information access has a direct relationship on the efficiency of a scientist’s research. This awareness among the librarians can lead to improve collections and user services for the benefit of the scientists and support for a productive research across the organization.

Erdmann (2001) examined the background and general principles of resource sharing in engineering and science libraries, providing an understanding of the collections, electronic access, user expectations, and resource sharing necessary to meet user needs.
Kim (2002) compared the citation patterns of Korean researchers and identified the extent to which type of publication source and type of authorship influence the choice of sources cited by them. Hallmark and Lembo (2003) addressed why scientists and engineers choose to become librarians and information scientists and how the library profession can identify and encourage these newcomers.

McGeachin (2004) examined the potential changes to the information-seeking behaviour of scholars and how they manage their own collection of research article and reprints. The study discusses possible ways scholars can manage this new electronic collection of research articles and how libraries can help them in their scholarly activity. Anghelescu et al. (2005) in his interesting study on user’s search behavior found that the level of domain knowledge seems to have an effect on search behaviour, but not on search effectiveness, and search behaviour does not seem to be related to search effectiveness. Singh and Satija (2006) made a comprehensive review research scanned in international context in the field of Agricultural Sciences. Bhattacharya and Ganguly (2006) reported that the establishment of an Environmental Information System (ENVIS) which performs important activities like creation of websites, publications etc. has been mainly done to disseminate information among researchers, consultants and policy makers.

Kumbar et al. (2007) found that the agricultural scientists working in the University of Agricultural Sciences, Dharwad, were consulting journals to update their knowledge and preferred the printed version of the articles. Nicolaisen (2009) described four distinct information seeking behaviour types: visceral, conscious, formalized and compromised. The visceral need is expressed as the actual information need before it has been expressed. The conscious need is the need once it has been recognized by the seeker. The formalized need is the statement of the need and the
compromised need is the query when related to the information system. Devendra kumar (2010) found that respondents use the Internet for research purposes and to access information quickly, using these services mostly in library and preferred Google as search engine.

2.4 Information Use Patterns of Electronic Resources

The electronic information resources have the effect of democratizing the research community. Researchers can interact with each other on the same footing at a faster and quicker way than it used to be. The result is that the research community seems to move towards a greater international homogeneity. However, there are few communities which are not fully utilizing the benefit of the situation because they consider online electronic information resources as a disorganized, unmanaged monster, without a way to verify on-line information, and without more than elementary search tools. Review has also been done on studies which focus on how the researchers search information, on the type and sources of information needed, on the nature of information sought, and the services they use are highly relevant, because they provide a basis for reorganizing libraries and information centers and reshaping their information support activities.

Stuart and Drake (1992) point out that scientists use technical reports, handbooks, journals, colleagues and finally resort to librarians. They examine how librarians may remain as active facilitators with technology and how scientists and engineers may be trained to do a better job of finding information by themselves.

Ellis and Haugan (1997) explored the role of information and information seeking in the research and development department and observed that although there were differences in the features of the information seeking patterns of the
research scientists and engineers. The behavioural characteristics were similar and the information seeking behaviour had similar categories to those of academic researchers. Use of electronic books is also clearly course driven - books with the highest usage are those required in a class, and most users come to an electronic book collection to use a single title. Wilson (2000) conducted a deep study, which attempted to set out what was, for the time, a novel perspective on appropriate methodologies for the study of human information seeking behaviour, focusing on qualitative methods and action research.

Boyce (2004) conducted research surveys of faculty, students, and scientists in non-university settings over time and found that journals and journal articles continue to be a valued resource; researchers today read from a variety of sources including print journals, electronic journals, e-print servers, and full-text databases. Franklin and Plum (2004) examined the methodology and results from web surveys and discussed how librarians reach decisions about networked electronic resources and services.

Gururaj and Kumbar (2011) observed that e-mail (more than 90% of respondents) seems to be the most primary use of Internet and that Google and Yahoo search engines seems to be the most preferred search engines by the faculty members and research scholars. Faizul and Naushad (2012) found that searching through ‘keyword’ had the strongest support among respondents and they are more inclined towards searching through keywords and author.

2.5 Information Use Patterns by Faculties and Students

In any educational or research institution, the library plays a vital role from being well-equipped to up-to-date; as it supports the faculty members of all subject
areas taught in the institution. Academic libraries support not only research needs, but also education and teaching needs. Hence libraries are responsible for ensuring the use of information sources, resources and services to benefit its users - hence there is a need for assessment of user needs and information-seeking behaviour of faculty and students in academic institutes.

Harter (1998) examines to what extent scholars and researchers are aware of, influenced by, using, or building their own work on research published in e-journals. Cochenour and Moothart (2003) surveyed graduate students and administrative professionals at the Colorado State University on the usage and acceptance of electronic journals. Almost all supported adding electronic access to print journal subscriptions, but few numbers supported canceling print subscriptions. Respondents strongly supported having access to journal back volumes older than four years.

Mine (2004) in his article, reviews the topic of usage patterns in terms of 1) overall trends of use and users, 2) factors that affect their usage, and 3) users' perceptions from 1995 to early 2004. Most faculty members use electronic journals as a useful and convenient tool for reading articles. Specific functions of electronic journals, such as links to references and early view, are highly valued by users, but motion picture, animation, and pay-per-view are not frequently used. Talwar and Neena (2007) studied the use of Internet in the scholarly communication of the social scientists in IGNOU and analysed its impact on their research and working in the Open Distance Learning (ODL) environment.

Muhammad, Khalid and Ferzana (2009) Stated on Library use pattern of Humanities faculty members at university of the Punjab, Lahore, Pakistan. A questionnaire – based survey was conducted to get response from the targeted population which consisted of 90 teaching and research staff of humanities
departments. The response rate was sixty nine percent. The study reveals that most of the respondents feel themselves good in library use skills, which is owing to their high frequency of library use, not to any formal training. They prefer to use the library themselves, rather than seeking help from library staff. Respondents found the central library themselves rather than seeking help from the library staff. Respondents found the central library richer in collection than their departmental libraries. Most of respondents were visiting the library for using the reference material or for searching some specific information and they seldom seek help from the library staff. Resources and services/facilities available in the central library were professed to be better than their departmental libraries. Respondents fulfilled their information needs not only from central and departmental libraries of the university but from other libraries in the city as well. They were facing the problem of non-availability of required material due to their heavy dependency on the library resources. Dissatisfaction was also shown with the library staff and technical support more journals and reference material in humanities were suggested by the respondents, along with better facilities and services. The knowledge about the information needs and library use pattern of users helps the library and information science professionals to develop the library collections improve the services and upgrade the facilities. This paper provides a case study of how specific kinds of scholars use library services and should be of interest to librarians providing information services for humanists.

Ahmed et. al (2012) found from the survey that the maximum number of the research scholars were consulting and accessing the E-journals from the university library and computer center not just for research purpose but also for keeping update in their subjects.
2.6 Electronic Journals and Scholarly Communication

Brakel (1994) states that the traditional model of scientific communication (the information cycle) is in the process of change and the current situation is described and new responsibilities of the information sciences in this regard are discussed. Rao (2001) explores the need for adopting electronic media for scholarly communication in place of printed periodicals considering the advantages such as accessibility, speed, cost and acceptance by the academic and research community.

Wenger (2002) states that in academia, trends of recent years have been toward web access to single database searches and electronic journals. Boyce (2004) says that Scientists today, read from a variety of sources including print journals, electronic journals, e-print servers, and full-text databases; the amounts for each vary with subject discipline and library collection decisions.

Borshchev (2004) on the role and importance of personal web sites of scientists emphasizes that these websites are in fact a communication tool owing to the fact that, in addition to personal information, they often include links to full texts of scientific papers as well as links to other scientific websites. Hurd (2004) found that migration from print to electronic has transformed the roles of virtually all participants in the system of scientific communication, Scientist-authors, publishers, and librarians.

Bjork (2005) stated that one of the effects of the Internet is that the dissemination of scientific publications in a few years has migrated to electronic formats. Ohakire and Okwuanaso (2006) maintained that the Internet as an instrument for research and communication has opened up numerous possibilities for resource sharing at local and global levels and information on latest journals, books and transactions can be exchanged directly through the Internet. This has caused many
libraries to move towards digital e-resources, which preferably is less expensive and more useful for easy access.

Dadzie (2007), explained that electronic resources are invaluable research tools that complements the print-based resources in a traditional library setting; the advantages include access to more current information, access to information that might be restricted to the user due to geographical location or finances and provision of extensive links to additional resources related contents. Still on the advantages

Deshpande and Pathak (2008) investigated use of e-journals in Astronomy and Astrophysics (A & A) libraries and information centers in India. The purpose was to identify the basic minimum infrastructure necessary to provide users access to e-journals and to facilitate easy response in all major A & A organisations in India. The authors showed that increasing use of the electronic information-seeking environment had produced changes in the practice of science.

Sharma (2009) investigated use and impact of e-resources at Guru Gobind Singh Indraprastha University, India. Majority of teachers and research scholars preferred to use e-journals in comparison with other e-resources. The author found that the teachers and research scholars used Science Direct and Springer Link often, respectively. Chirra and Madhusudhan (2009) found that almost all (96%) of the respondents are aware of the e-journals and access the UGC Infonet Digital Library Consortium.

Santhi et al (2010) studied use of electronic information sources by academic staff at affiliated engineering colleges under Anna University, Coimbatore, India. Statistically, significant relationships were found between use of electronic information sources and age or computer literacy.
Singh and Bedi (2012) show that users are well aware about e-journals service provided by the libraries and e-journals are playing a very important role in their research, teaching and training; and the need to subscribe more multidisciplinary e-journals by their respective libraries.

Afaq and Mahmood (2005) analysed use of library and information science (LIS) journals (electronic and paper) in two sets of graduate students from Departments of LIS in Malaysia and Pakistan. Findings of the survey showed that LIS journals had as their objective, provision of guidance in the education and learning process of LIS students and provision of leadership in the practice of librarianship. The profession needed to have a heightened awareness of LIS journals and required fast and easy access to that body of literature.

Borrego et al (2006) in their study found there is an increasing preference for the electronic information sources to the detriment of the printed format. The collection of electronic journals is highly valued and most users expect to increase their use during the next few years. Jowkar and Dehghani (2006) studied use of e-journals in comparison with print journals among post graduate students of the departments of Education and Psychology of four Iranian universities. They found that most respondents used print journals, but the frequency of e-journal usage was more. Most students evaluated the importance of journals (electronic and print) as high, even most of them preferred the electronic format; they evaluated their skill in use of e-journals as medium and believed they needed further instructions for use of e-journals. Most of them, explained that the main reason of their low usage of e-journals.

Boraiyan (1995) stated the management functions in an Agricultural University Library and stressed the duties and responsibilities of the librarian in
agricultural university. The paper explained about the factors influencing the decision making of the librarian. It also described various personal, administrative, organizational and managerial abilities with the librarian like a Manager in a larger service organization.

Womboh (1999) stated on education and training for subject specialization in agricultural university libraries in Nigeria. The publication traces the poor agricultural production situation in Nigeria, which gave rise to food insecurity, forcing the Government to take various measures to contain the resultant food scarcity. One of these measures was the establishment of Universities of Agriculture (Uni-Agrics) with the specific mission to transform agriculture through training, research and extension in order to boost food production. After giving a brief history of the education and training of librarians in Nigeria, the author submits that such training is not suitable for prospective subject agricultural librarians. This situation has resulted in the acute dearth of such librarians, giving rise to an unhealthy state of affairs, whereby non-specialized librarians are currently employed. A blue print for the education and training of subject agricultural librarians is therefore given.

Ajegbomogun (2007) found that insufficient administrative infrastructure and resources were the major contributing factors and reasons why harnessing of e-journals is not more ubiquitous and common in Nigeria. The paper offers some useful suggestions on how to tackle these problems through constant training of users on the use of internet, networking all libraries' computer terminals, provides stand-by generator, and put in place a technical oriented manpower.

Rajanikanta and Ramasesh (2009) investigated needs for the library infrastructure facilities to access on-line journals through the consortium and databases in medical college libraries in Bangalore, India. They provided information
about accessing the on-line journals by the faculty members working at medical colleges.

Ahmed et al (2012) saw that though scholars prefer e-journals over print journals, the level of satisfaction regarding the facility of internet is low. They are in need of full text articles and they require effective training and orientation course on how to use e-journals effectively. Though electronic journals are the preferred choice, in developing countries this is not always the case, due to access and connectivity issues.

2.7 Effectiveness of Scholarly Scientific Research : Impact of Information Technology

The effects of information technology on scientific communities such as academic departments, professional associations, libraries, research institutions, scholarly publishers, database producers are experiencing the influence and impacts more profoundly in the way their research is carried out and shared across their community. The major reason for using Information Technology applications should be that it would ultimately benefit the end user by improving the range and quality of user and support services. One of the major significant challenges facing academic libraries during times of dynamic technology is the ability to understand the changing needs and perspectives of their users. Libraries are more concerned to help users in coping with changing technologies as their potential has significant impact on teaching education and research activities of research community.

Pease and Gouke (1982) reported that after the introductions of the on-line catalogue there is an increase in the use of library catalogue and collections. Moreover, users consulted the on-line catalogue frequently, found relevant materials in their searches were satisfied with search results and said that online catalogue is
easy to use without formal instructions. Tomajko (1985) describe how new technologies affect the way scientists and technologists communicate. Bichteler (1987) stated that most users preferred online assistance, as they frequently wish to begin searching immediately without taking the time to read instructions or they may be accessing the catalogue from remote locations.

Konnur and Rajendra (1994) discussed the application and advantages of computers in library work and information services provided to users and the problems faced in Poona University library. Ansari (1998) reviewed the computerization activities in 14 universities of Bihar and found that 4 have received financial assistance from INFLIBNET for computerization of their libraries. He has discussed certain problems and offered a few suggestions for improvement of computerization process in university libraries of Bihar. Chaya Devi (1998) has conducted a survey by interviewing the three university librarians viz Andhra University Library, Osmania University Library and Sri Venkateswara University Library of Andhra Pradesh to assess the computerized services offered by them. She found that the impact of Information Technology is not yet felt much in these libraries. Though, these libraries have certain hardware and software facilities, the proper services are not reaching the academic community to the expected extent. She provided a few suggestions for improving the computerized information services to users. Vivekanand Jain (1998) stated that Banaras Hindu University has a computer center with campus LAN and ERNET facilities. He provided the hardware and software facilities of Banaras Hindu University and describes the developments due to INFLIBNET programme in the university. He felt that due to large size of database, BHU requires a huge amount of money, trained manpower and proper planning for automation. Hurd (1998) discusses the effect of information technology on scientific
communication and explores several new models for scientific communication that address the information needs of scientists.

Fernandez (1999) did a user study to assess the impact of the Internet on scientific communication among a group of scientists and information professionals in India to understand their information seeking behaviour and internet usage in their work. Maheshwarappa and Tadasad (1999) reports the extent of availability and use of computer, based on the data collected through questionnaire from 571 out of 931 college libraries in Karnataka state. Only 121 colleges have computers, of which only 45 colleges are using computers for library activities. Only 14 of 45 college libraries are using the computer readable databases.

Lally (2001) commented the need for finding new ways to work together in order to understand and take full advantage of media for scholarly communication among the research communities. Herman (2001) found that the integration of electronic media into academic work is progressively harnessing the new technologies to scholarly information gathering endeavors and characterizes the information activity of university faculty in an increasingly electronic environment.

Mahajan (2006) conducted a study of Internet use by researchers analyzing the technologies that have transformed society into a knowledge society and found that the Internet is considered to be the most valuable of all computer technologies. Ahmad and Fatima (2009) noticed that researchers used a variety of ICT products and services in their research as these products were very helpful in finding needed information quickly and easily. They recommended proper training and guidance for use of ICT based technologies for the optimum utilization of those services by researchers. Tenopir et al.,
Faizul and Naushad (2012) studied how the web has influenced the developments of new modes of scholarly communication including various discussion forum, websites and home pages. Although these channels are gaining popularity for communicating and exchanging research results, yet the scholarly journal is regarded as the most preferred medium. The peer review process and archiving of research results for long term availability have helped the scholarly journal to attain a firm position. Due to digital publishing technologies and Internet, the scholarly journals have undergone many changes. Impact of Information and Communication Technology Applications during the past few decades have brought radical and constructive changes in every aspects of human life. It has brought the users and knowledge more closely.

2.8 Information Use Patterns in Agricultural Institutes

Information is a resource of enormous importance for economic, social and scientific development. The economies of most developing countries are agriculture-based and the free-flow of information can play a decisive role in the improvement of this sector. Access to timely and accurate information can help policy and decision makers to make correct decisions. On the contrary, decisions based on inaccurate, irrelevant, inadequate and obsolete information could be disastrous.

Mangla (1988) traced the developments in agriculture after independence. In his keynote address, he examined the developments in the field of agricultural education, establishment of agricultural institutes and universities and development of agricultural libraries. The paper discussed the role of agricultural libraries in the agricultural educational system. The article also covered the role, status and qualities of agricultural university library professionals. Wasserman (1991) stated that agricultural research plays a crucial role in enhancing agricultural productivity
through using innovative and sophisticated techniques for developing high-yielding crop varieties, controlling pests and diseases, and improving animal production and management, etc. As well-equipped laboratories and field facilities are indispensable to carry out agricultural research, well-developed libraries are essential to provide information support to researchers;

Majid et al. (1999) conducted a questionnaire survey at the Malaysian Agricultural Institutions to determine their patterns of use of the library in their research work. More scientists were found to visit libraries personally when they need to search the library online public access catalog (OPAC), scan periodicals, or use other sources for identifying new information on their topics. Scientists use their library extensively while preparing research proposals and writing reports. Majid et al. (2000) studied the information needs and information seeking behaviour of Malaysian Agricultural Scientists found that research scientists spend 16 percent of their office time on reading and literature searching compared with 9.3 percent spent by academics. Scientists preferred using primary sources of information, particularly journal and review articles.

According to Chakraborty (2003), agriculture scientists rely more frequently on scientific/technical journals than on teachers. Salaam (2003) “Library Utilization by the Undergraduates of a University of Agriculture”. Author attempted to ascertain the level of utilization of services of Nimbe Adepe Library of the University of Agriculture. Study brought forward that students used library mainly to prepare for examination and to write class assignments. Long distance between the campus and town, where most of students reside was found as main obstacle in the use of library.

Biradar et al (2009) surveyed the students belonging to agricultural science college, Shimoga to study the frequency, purpose and usefulness of agriculture
science periodicals and found that almost all respondents visit library regularly. Though the documentary and non-documentary sources are sufficient but the frequency of use of sources like encyclopedia, patents, reports an directories is very low. Non-documentary sources are less used perhaps owing to lack of awareness or inconvenience in use of these resources. Present day libraries are giving more emphasis to e-consortia approach. There is an urgent need of establishing e-consortia model among the agriculture libraries in India and also focus on information literacy programs.

Okorie and Agboola (2012) concludes that the e-resources have created access to databases which has helped in actualizing the objectives of the institutions in the areas of transforming, repositioning and re-engineering the University of Agriculture to make information available towards poverty reduction, improvement in the standard of living and wealth creation in the communities.

Singh (2012) study intended to explore the degree of agricultural information use, and their level of satisfaction/difficulties faced by the Indian agricultural scientists working in the institutions of Indian Council of Agricultural Research, so that on the basis of the findings of the study, need based collection could be developed by the agricultural libraries and meet the information needs of their clientele judiciously and effectively. It was found that the leading sources of information for agricultural scientists in order of use are: databases, journals; books, research reports, monographs, etc., conversation with colleagues and experts, and attending lectures, conferences, seminars, etc. were also find to some extent useful sources of information by the agricultural scientists. The study also found that the Agriindex, AGRIS (of FAO), CAB Spectrums (of CABI, Willingford, UK) are the most used indexing and abstracting/databases by the agricultural scientists in all libraries/information centers and ranked one, in terms of frequency of its usage.
2.9 Inferences:
From the above review of literature, the following inferences could be drawn:

1. About 110s research publication have been reviewed

2. The reviews have been grouped as user studies; evolution of user study; trends in information user studies; information needs of students faculty and researchers; electronic scholarly journals; impact of ICT on the effectiveness of information use, information seeking Behaviour of research faculty; electronic information resources of information use pattern by faculty and research scholars; information use pattern in agricultural institute; usage and acceptance of electronic information resources; user needs of electronic journals and scholarly communication awareness and attitude of user on the use of e-journals comparison of print and electronic usage and access problem and related to usage journal.

3. The review covers most of the European and western literature covering more than four decades of literature, of course, a sizeable amount of literature by Indian authors have also been reviewed.

4. A majority of the reviews concentrated on use of e-resources and the impact of information technology on scholarly communication.

5. Some studies are dealing with information use pattern of specific professionals like astronomy, physicists, chemists etc. A separate sub section has been allotted to the agricultural discipline which is the core research subject of the research investigator.

6. Some studies project information seeking behavior at the national level, on other hand many studies are focused on respective academic and research institute.
7. Majority of the research done at the micro level focusing specific institute, users of specific profession or specific category and users like disadvantaged SC, ST users.

8. There are studies based on bibliometric analysis and citation analysis of the use of the researcher.

9. Although studies report the use of information by the agricultural scientists, but there was comprehensive study on the information use pattern teachers and students of agricultural science colleges in Karnataka state, hence the present research bridges the gap therefore this research has been justified from the point view of literature review

In the next chapter a brief account of agricultural colleges and their libraries is provided which are sources of research data of theses.
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