CHAPTER - 2

A REVIEW OF RELATED LITERATURE
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The ICT has become a focal point in all subjects in the recent past. Publications are encouraging research in the ICT related areas in library and information services. A majority of the studies are either in isolation, partial or scattered. The present study though small is unique. Majority publications related to this study are recent in nature and they deal with different aspects considered the present study. The collected literature was organized under different areas on ICT based user studies in libraries, application / use of ICT in libraries, impact of ICT in libraries, ICT training in libraries, implementation of ICT in libraries and status of Agricultural Information Services are reviewed.

The main aim of the review of literature is to acquire knowledge on the earlier studies undertaken by the researchers / authors in the related field of study. This will help to find out the available information, which is related to the objectives of the proposed research and assists in delineation of the problem area besides providing a basis for a theoretical framework and for interpretation of the findings. It facilitates to find out the gaps in selecting topics for research studies besides informing the available techniques, which can be used to measure the factors under study and to compare the present results with those of the previous research.

An attempt had been made to review the relevant literature on ICTs used in libraries for providing better services to the user community. This review is presented in a chronological order.

Fred, Reneau and Patterson, Richard (1998) stated that the Online Agricultural Information Services offer agriculturalists the opportunity to access information related to the planning, management, and operation of agricultural enterprises. Online agricultural information services are outlined, agricultural related services rendered by online networks are discussed, service comparisons are presented, and benefits of agricultural online services are also discussed.
Aaltonen, Maj-Lis and Hagelin, Ritva (2000) said about web based reference sources. This paper discusses the bibliographical databases with links to electronic journals on agriculture. The databases such as JUKURI, JULKI of Finland, AGRIS, FSTA, CABI, AGRICOLA, and their links with other sources are also covered.

Aguolu, I. E (2000) carried out a study based on a random sample of ten agricultural libraries and their collection to determine their role in the dissemination of agricultural information to agricultural information-seekers in Nigeria. An assessment of the collection and services offered revealed that the agricultural libraries in Nigeria disseminated information to seekers mostly through document loan and reference services. Provision of photocopying and modern computer-assisted information services, which would facilitate information dissemination, remains a rarity. The author made some recommendations in order to improve the effectiveness of information provision by agricultural libraries like training of librarians working in agricultural libraries in modern computer-based information, documentation and retrieval techniques so that they can readily produce lists, bibliographies and indexes even with computers in another section of their organization.

Kannappanavar, B.V, Vijaykumar (2001) highlighted the use of hardware and software facilities in University of Agricultural Science Libraries of Karnataka. They also highlight the access of networks, information services and barriers in information technology (IT) applications. A survey was conducted on two agricultural university libraries in Karnataka, namely University of Agricultural Science library, Dharwar and University of Agricultural Science Library, Bangalore. It was found that neither of the University libraries under the study has databases and full implementation of IT applications in their libraries. Based on the observations of the study, a few suggestions were made to improve the IT application to provide computerized information services to the users in the agricultural university libraries in Karnataka. There are many network facilities available at national and international level, which are not accessed by the libraries under study. This is mainly due to lack of adequate training and financial assistance. To overcome this, the librarians should approach the university authorities and
train the library personnel in IT applications. The university librarians should also approach the funding agencies like INFLIBNET and Indian Council of Agricultural Research (ICAR) for their library automation and provide IT-based information services to their clients.

Sreenivasulu, Vayyavuru and Nandwana H.B (2001) provide an overview on the networking of the Agricultural Information Systems and Services in India. This paper covers a range of issues related to Agricultural Research Information System (ARIS) of ICAR in India. It discusses in detail the Agricultural Research Information System Network (ARISNET) for India, and its modules consist of Agricultural Research Personnel Information System (ARPIS), Agricultural Research Financial Information System (ARFIS), Agricultural Research Library Information System (ARLIS), and Agricultural Research Management Information System (ARMIS) and ARISNET management. It also reviews the strength and development of Agricultural Libraries in India including institutional systems of ICAR, State Agricultural Universities, and ICAR Institute Libraries. It also covers information technology applications in agricultural libraries and information technology infrastructure in the Agricultural Libraries in India.

Chandaraiah, I (2003) opined the agricultural information should be disseminated through multimedia based information systems mostly audio/video systems. The evening radio broadcast of agricultural information through the loudspeaker should be restored at habitation level, a trained agriculturist made in charge for communication and information between the organizations and the people.

Nataraj, Vibhuti (2003) has emphasized in his article about the “Resource Sharing Model for Agriculture Libraries and Information Centres” that the resource sharing networking has emerged as an important alternative. Information Technology with Computer and Telecommunication facilitated the resource sharing among the institutions located in different geographical areas. There is no alternative for the institutions that are engaged in research and training as well as generating information on agriculture development, but to come together under a formalized network in order to
develop strategies for effective communication, resource sharing and information dissemination.

**Padmini and Prasad, Murali** (2003) attempted to highlight some of the agriculture related information sources, which can meet the ever-increasing demands of the agricultural communities. According to them Internet is the valuable resource, which can provide agriculture information relating to available agricultural information systems, information centres, institutions, experts and professional bodies, which in turn strengthen the agricultural communities.

In **Singh, Neena** (2003) paper, there is a discussion on the state of agriculture libraries in India and evaluation parameters such as, need for Agriculture Library Association, Automation and Networking, Agriculture Documentation Centre, professional development of library staff, professional status. This paper suggests measures for improvement of library services.

The scope of this paper is to evaluate and examine the status of agriculture libraries in India and suggest measures for their improvement to meet the challenges of the present development. The author points out that strong professional commitment is essential towards the improvement of agriculture libraries in the country. There is a need to revive the Agricultural Library Association, hold national level conferences and seminars to share professional ideas, development and problems. It is also urgent to formulate an IT strategy to automate and bring all agricultural libraries into a single network. Although a progress in this direction has been made by Agricultural Research Information System (ARIS) of ICAR under the ARLIS (Agricultural Research Library Information System) module, the work is moving in a slow pace. It is suggested that the agricultural librarians and Information Officers of SAU and ICAR institutes be empowered to automate their libraries and submit a progress report to the central monitoring team appointed by the ICAR.
In order to boost the computerized bibliographical development of databases in various disciplines of agriculture, the author argues that it is necessary to develop various aspects like providing proper training to LIS (Library and Information Science) professionals in the latest technologies; development of software packages for agricultural libraries; publications of LIS journals exclusively on agriculture libraries and information centers. There is an urgent need for a National Documentation Centre on Agriculture Sciences on pattern of DESIDOC and INSDOC.

**Spacey, Rachel** (2003) attempted to consideration of the implications of technological change for public library staff and managers in the UK is based on the selected results of a literature review. Recent developments affecting the growth of information and communication technology (ICT) in public libraries provide a context against which research into the effects of automation, the introduction of ICT in a variety of library environments and into society generally, are explored. The value of attitudes to ICT are questioned, noting that attitudes are often seen as being important in determining the successful implementation of ICT in libraries. Training is suggested as an appropriate means of enabling staff to cope effectively with technological change. Successful training needs to appreciate that staff have different needs and so prefer different training methods. Resistance is also viewed as a natural response to change that managers should note and attempt to understand, if and when it occurs.

**Veeranjaneyulu** (2003) pointed out that agricultural librarians and information workers are finding opportunities to apply their skills in identifying, organising, classifying and selecting material in both conventional and non-conventional formats to meet the changing needs of their users. New communication technologies are starting to have a major impact on the provision of this information.

**Bilawar, Prakash Bhairu** (2004) focused on the nature of communication technology and highlights various modes of mass communication through Computer and Internet, which have an impact on libraries and information services.
This paper examines how library services are best served by the adaptation of such technology in this digital era. The authors further focus on the digital library concept and provide a comparison between the traditional libraries and modern libraries. As the speed of IT revolution is in top gear, during this decade; It elevates the library to a global library system for easy access. IT serves as a vehicle for future development. Finally, the authors enumerate the many advantages of the communication technology with respect to library requirements.

As the authors observe, the emergence of communication technology may transform the role of classifiers and cataloguers to that of communicators and networkers of data and information, which may be called skilled organizers’ of knowledge. The rapid growth of advancement in this technology will help in the development of a nation and its people in general. It helps greatly in R&D libraries. It makes the library services faster, minimizes the cost, and helps in decision-making.

**Chauhan, Budhi Prakash** (2004) curriculum paper discussed the OPAC, Information Services, Reference Services, Bibliographical services, CAS, Document Delivery, Inter Library Loan and Union Cataloguing, Audio-Visual services, Customer relations and user education. He has also dealt with ICT based new services like Internet access, access to web based resources, e-journals, e-books, ETDs, patents, course materials, subject gateways, digital library and archives etc.

**Gulati, Anjali** (2004) discusses the status of ICTs in Indian libraries with special reference to special libraries and the efforts made by various institutions to propagate e-information products and services. This paper highlights the consortia efforts in India like JCCC Consortium, INDEST Consortium, CSIR E-journal Consortia, and UGC Infonet. It further discusses digitization efforts in India at NISCAIR, New Delhi, IIITM, Kerala, C-DAC Pune, and the Digital Library of India. In addition it incorporates details on major information systems in India (such as NISSAT) and major library networks in India (such as INFLIBNET, DELNET, CALIBNET, etc.) It also details the challenges for library and information science professionals in the present IT environment.
Muhammad, Ramzan (2004) paper presents the extent of IT utilization in libraries in Pakistan together with librarians’ level of knowledge in IT and their attitudes towards IT in libraries. Primary data were collected through a questionnaire survey of 244 librarians working in libraries in Pakistan.

The study revealed that only a low level of IT Knowledge was found among the librarians. The analysis of relationships revealed that IT utilization in libraries, librarians’ awareness of the potential of IT, reasons for attaining professional qualifications, and knowledge in IT had a significant relationship with librarians’ attitudes. The findings of the study also revealed that the level of IT utilization and the librarians’ level of knowledge in technology are good predictors of librarians’ attitudes towards application of IT in their libraries.

Obioha, J (2005) identifies the role of ICT in information seeking and use amongst research officers in research institutes in Nigeria. The study examines awareness, use, exposure to ICTs; role of ICT; and improvements on ICT tools. It shows that ICT plays a significant role in information sourcing, generation, processing, storage, retrieval, dissemination and also entertainment. It also proves that for ICT to be used maximally there is a need to have regular power supply, stable infrastructure and provision of more ICT tools and centers.

Wijayasundara, Nayana (2005) point out now-a-days libraries need to play a major role in satisfying informational, instructional and personal needs of their clientele. During the last half-century, the combination of computers and telecommunications began to produce so called ICT. A drastic change can be seen in library systems throughout the worlds due to ICTs.

This paper presents the results of a research study on the extent and feasibility of utilizing ICT in academic and special libraries in Sri Lanka. The problems are identified as technological, managerial, infrastructure, human, and political and social and
suggestions are made to overcome these barriers. ICT applications in libraries can be categorized into two groups: one is for housekeeping functions, whereas the other one is for the information retrieval functions. It is evident that an important element for future library development- in the form of utilization of ICT tools- is at a very low level of implementation in Sri Lanka. The other important factor is to have a policy for the adoption and utilization of ICTs in libraries. The author concludes that library and computer expertise should get together for implementing Information policy.

The extent of application of ICT in library functions has been found in three stages of computerization: planning, development and operational. A future study can look into the sub functions like cataloguing function, data entry and amendment, authority control, record import, catalogue access, Online Public Access Catalogue (OPAC). All the above functions are possible only if there is an enthusiasm of library managers for ICT. The library staff must be given a thorough awareness of ICT potential, and then the benefits reaped in the long run through introducing ICT would be much more rewarding.

Islam, Shariful and Islam, Nazmul (2006) study has attempted to explore the gradual advancement of modern technologies in libraries distinguishing old and new technologies. The study endeavors to identify various components of ICT, which are used, or being used in libraries and information systems. The study identifies the precise reasons to use computer related technologies in libraries. It also delineates the functions; impacts and challenges of ICT based library system. The study is based on the review of primary and secondary literature, which includes books, journals, documents, seminar papers etc. relevant literature also collected from Internet browsing.

Murthy, A. Krishna (2006) discusses the role of ICTs in Agricultural Information Systems at MANAGE, Hyderabad where in the fruits of technologies are initialized Systematically and the web based information services formatting basis for Agricultural Extension System is briefly Portrayed. The present study is an attempt to study Agriculture Information Systems and their information technology applications,
services and products in general. Information technology has fundamentally effected the operations of library and information services and this has also has great impact on the agricultural extension education, training and providing the services to the users of various work levels.

The library integrates state of the art IT with traditional services bringing together all the modes of the information system available in MANAGE into one integrated system. The Centre renders a wide range of facilities using the latest information technology services to access information in order to conduct their professional work. Development of a database of books and articles scanned from current literature is an ongoing activity of this center. Articles of interest to research and training activities at MANAGE, are abstracted and made available to faculty through the OPAC. The center also offers literature search services, bibliographic services by retrieving information from the in-house database, CDs and the Internet. Attempts are on to map information resources on the Web to make it easier for faculty to log on to sites of interest to them.

As a part of the digital library initiative many of the MANAGE publications are available full text on the website at www.manage.gov.in. Users in the library can search the bibliographic data base find specific information online. MANAGE has taken up several innovative programmes to strengthen its information processing and networking services and related them directly to extension management and training needs at State Agricultural Departments and Agricultural Universities. These are: Interactive Multimedia Based Training Project, Computer Based Agricultural Expert System - Rice-Crop Doctor, Radio For Farmers - Rythu Vani, Tele Conferencing System, Videoconferencing, Mobile Vast Videoconferencing, Web Based Information Services, Manage Website: www.manage.gov.in, Agri-Clinics And Agribusiness Website: www.agriclinics.net, Kisan Call Center Website: www.kisancallcenter.net.

MANAGE holds an excellent IT infrastructure for the activities of the institute which it is placed as the best National Institute in Agricultural Extension. MANAGE has world-class flexible computer labs with technological innovations to maintain very high
standards in IT teaching and services provided to its users. MANAGE is the best IT training and facility management institute in Indian Agricultural System. The major IT services mentioned all the above are under one umbrella. Apart from them it has its own 24hrs service setup to make and run the services at par with IT industry standards.

**Omona, Walter and Ikoja-Odongo (2006)** study is the outcome of a study based on the application of ICTs in health information access and dissemination in Uganda. The project focused not only on information acquired through libraries for research, teaching, learning and practice, but also on ICT applications concerned with the administration and planning of health services in Uganda. A thematic analysis highlighted the current state of ICT applications, the extent of applications, the roles played and problems faced. The paper further explores areas where it is used most, cost of accessing information, user profile, ICT literacy, quality of services and telemedicine in the country. It concludes that a number of challenges must be met to avail the full benefit of the use and application of ICT in health information access and dissemination in Uganda, and at the same time, it draws the attention of all the stakeholders in the health sector to the need to support and promote ICT as the most effective tool for health information access and dissemination.

According to **Ramana, Venkata (2006)** the impact of IT is enormous and global in its magnitude. IT has become an integral part of all aspects of the library by paving its way into library operations, information resources, services, and staff skills requirements and users’ expectations. IT has virtually unlimited potential for a variety of useful applications in libraries as it significantly contributes in providing improved quality, increased productivity, more efficient operations, better resource sharing and more effective services to the users. Today, the success of a modern library is increasingly dependent on the most effective utilization and strategic management of new technologies in libraries.

The author provides an overview of IT and also an excellent review of the global as well as national scenario of the current trends in IT applications in different aspects of libraries like library operations, information services, staff and end users. He emphasizes the key factors to be followed in strategic technology planning and strategies to be
implemented for managing technological changes in libraries. This study will be of great benefit to the decision makers, practicing library managers, university teachers, research scholars, students of library and information science, library software development firms and all other library professionals involved in planning, implementation and management of modern information technologies in libraries.

**Haneefa, K. Mohamed** (2007) study examined the contemporary use of ICT based resources and services in special libraries in Kerala. The study was based on questionnaire survey of users and confined only to special libraries with ICT resources and services. The study investigated areas including; Library professionals help in the use of ICT resources and services; users’ satisfaction in the application of ICT and reasons for the dissatisfaction; users’ suggestions for training; and their opinion about user education on ICT. The data were analyzed and inferences made based on standard statistical methods.

This study has revealed that the ICT based resources used by the largest percentage of users was the e-mail followed by WWW. The Users suggested a variety of measures related to formal orientation and training in ICT based resources and services for their benefit. The findings of the study have provided useful insights for special libraries in Kerala to take appropriate strategies in a rational and systematic manner to increase the use of ICT for library operations and services. The study concludes that most of the special libraries in Kerala need proper ICT infrastructure including hardware, software and human ware and library staff have to be trained properly to make use of the resources optimally both conventional and digital resources.

**Nath, Amar. Gautam, B. and Parveen, K.** (2007) reported a survey of librarians of Chandigarh city to assess the ways in which librarians use ICTs, their level of knowledge and skills, problems faced in the use of ICTs and their training needs. The study also investigates the extent of adoption of ICT in Chandigarh city libraries as modern tools of providing library service to users. A questionnaire was used to survey the ICT skills and knowledge of librarians with 9 sections on respondents’ background, file
management, word processing, spreadsheets, databases, presentations, E-mail and Internet. This survey of 21 academic and public libraries revealed a low level of ICT knowledge among librarians and a general lack of formal training among the academic librarians. The study recommends library education with a balanced curriculum including both traditional as well as ICT knowledge and skills.

Singh, Brijnath (2007) study provides a current state-of-the-art report on the use and applications of ICT in Library and Information Centers. The study also identifies the causes and problems that hindered ICT applications in the LICs and their possible solutions. The study is an outcome of a research project jointly undertaken by the authors and it explores and evaluates the use and availability of ICTs in the LICs of Noida. The study is based on 25 LICs from the different sectors such as public, government, corporate, public enterprises, and private sectors. The data were collected through a structured questionnaire, distributed personally as well through mail / e-mail among the librarians of the selected institutions.

This study finds that majority of the LICs of Noida have the basic hardware facilities such as servers, computers, printers, photocopier, internet connectivity etc., except one library, (i.e., Network Programs library). About half of the LICs have better hardware facilities including scanner, barcode printer, barcode scanner, etc., but the hardware facilities in a majority of LICs are not being properly utilized because a majority of the library professionals are not properly aware of the use and operations of the hardware. The study recommends that LICs of Noida should give priority to digital initiative, consortia-based subscription, and increase in the funds and recruitment of IT trained staff for better ICT-based services and products to their users.

Antherjanam, Santha Devi and Sheeja (2008) in their study attempted to find out the impact of ICT on LIS and its major shifts and practices in the university library of CUSAT. The methodology followed included observation, discussion with colleagues and also a questionnaire survey. The findings of the study are that users are making very good use of the available ICT facilities. With the help of telephone, e-mail, fax etc.
reference queries are answered faster than before. SDI, CAS etc. are also done faster than before. Issue and return of books, renewals are done faster than before. Book selection, price checking is also done very efficiently using ICT. About 90% of the users of the library search OPAC for getting information about the where about of books.

Chinnasamy, K (2008) paper describes in brief, a survey conducted at Janson’s School of Business, Coimbatore to find out the use of e-Resources and Services. This study also covers the impact of these resources on the student academic work and study. It also describes the orientation given by the library staff members to the students. In this study it was found that students use the e-Resources for their academic success everyday effectively as well as for various purposes like “Article review and “Project Work”.

Devi, Rebika (2008) highlight the impact of the ICT services to the users of Manipur University Library. ICT based services of the library are also considered. Major findings and conclusion are summarized in a suggestive way as guidelines in providing better services in future to meet the needs of the users. Surveying the different user groups of the Manipur University Library by through questionnaire has made the study. The outcome shows that all the respondents have the knowledge of computer handling so that they are able to using the ICT based services in the library.

The major findings of the study may be summarised as follows:

- The overall awareness about ICT services among users is very encouraging.
- However, some of the users suggest conducting regular ICT awareness programmes.
- MUL is providing good ICT services to the users as well as it is also getting positive response from the users.
- Even then, the users are not fully satisfied with the services.
- The services should be made more user friendly so that they can derive the maximum benefit.
- The users also made suggestions for improving the services in many ways.
The findings of the study will be helpful in providing ICT based services more promptly to the library users of Manipur University.

Grace, Emmanuel and Alfred S, Sife (2008) reported by the Sokoine National Agricultural Library (SNAL) has already computerized most of its services. The library has acquired a number of ICT facilities that contribute positively to the provision of information services. However, the new technologies provide new challenges related to acquisition, preservation, maintenance and security issues, training of users, and lack of awareness and commitment among key stakeholders.

Thus this paper discusses some of the challenges experienced by Sokoine National Agricultural Library (SNAL), it highlights measures taken to overcome some of these challenges and proposes strategies for proper management of ICTs in libraries. The librarians and other stakeholders in the universities are urged to rework their profession to extend the traditional territories from the traditional library to the global information services, from the territorial library to the virtual library, or a combination thereof. Choosing appropriate ICT hardware and software; continuous pressure for more funds from the parent institutions; seeking from alternative sources of funds; staff and user training; and raising awareness are among the key the strategies that can lead to effective utilization of ICT facilities and services in libraries, are some of the recommendations made in this study.

Kumar, Krishna (2008) stated that the convergence of ICTs as embodied in the Internet has transformed the present day society in to a knowledge society. Earlier, information and knowledge were preserved and passed in oral form and other forms like manuscripts etc. Today, it is passed from one individual to an infinite number of other users through a number of media and formats, which makes rapid and widespread dissemination of word processing. The Internet is considered to be the most valuable of the many computer technologies available to the society today.
The Internet is an ocean of information and is being utilized in every walk of life these days. It provides information on various fields like business science, education, government and non-governmental organizations, etc. It is one of the medium through which information can be stored, arranged, and transmitted back to the users quickly, in a timely, fashion, and accurately. There are hundreds of millions of web pages, bibliographical databases, and full-text databases available on the Internet.

This study demonstrates and elaborates the various aspects of Internet usage, sources of acquiring information about Internet websites, favourite search engines, problems faced by the users in browsing the Internet, satisfaction with Internet for research purpose and various facilities and infrastructure facilities available in the libraries. Suggestions have been given to make the service more beneficial in the Science and Technological libraries.

Oleg, Shatberasvili and Ajit, Maru (2008) conducted a study about the status of Agriculture Information Services in five countries of Central Asia and Caucasus was made under GFAR / CACAARI initiative in 2007. The study was aimed to know about the status of FAO Depository Libraries, other Agricultural Libraries, Agricultural collections of National Libraries and other ST (Science & Technology) Libraries. The availability of electronic information resources was also examined. The functions and services relating to access to resources as well as the development of national and regional resources and the possible solutions to the problems in information management were discussed.

This study has shown that in spite of certain recent developments, like; access to remote electronic information resources (including full text Electronic Journals and databases). Involvement in International Cooperation etc. the overall state of them is to be improved in a number of directions provided by the study. There is a need to improve access of researchers to International and Regional STI to participate in sharing and exchanging regional information internationally, which implies both traditional Library Networks and ICT, based services. There is a need to enable access to agricultural
information to not only to researchers but also to farmers and agricultural intermediaries in the market chain.

Patil, Sambhaji G (2008) presented a paper on a study of the impact of ICTs in the MET’s (Mumbai Education Trust) Institute of Engineering, Bhujbal Knowledge City, Adgaon, Nashik (MET-BKC-IOE). Information and Communication technology (ICT) has transformed Library and Information services radically globally. The Internet has provided universal access to information. The paper recommends proper training and guidance for the use of ICT-based technologies for the optimum utilization of these services by the users. The study focused on the use of ICT products and services, purpose for which these ICT products and services was used, frequency of use of computer and Internet, their level of expertise in using ICT, preferred search engines, and major impact of ICT on their research work through a structured questionnaire.

The study revealed that the respondents used a variety of ICT products and services for their research work as it was helpful in finding information quickly and which also helped the users to access, manage, integrate, evaluate, create, and communicate information easily. The study identified that users were not getting proper training/guidance and assistance from the staff/librarians, which was very necessary for the effective use of ICT products and services.

Rokade, S.M (2008) stated that in the State of Maharashtra, four agricultural university and six ICAR institute libraries are functioning and rendering information services to their users. Considering the present needs of the users it became essential to establish digital library with the help of modern information technology. The basic concept behind the digital library is to have resource sharing between agricultural university and ICAR libraries in Maharashtra. In view of this integrated information system presented in this paper in the form of “MAH.AGU.AND.ICARNET” There is a need coordination and cooperation of ICAR.
The study reveals that the university library of Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola has the infrastructure facilities and therefore it was proposed that a network of all the four agricultural university libraries and ICAR libraries in Maharashtra should be established and university library of Dr PDKV Akola. The university library may be considered as a center and clearing house for agricultural information in Maharashtra in order to satisfy information needs of agricultural research and management activities in the state, which are changing from time to time.

Sangeetha, Keisham and Sarika, L (2008) have examined the present status of academic libraries of Manipur particularly of college libraries of valley areas on varied aspects like: ICT based services, automation status and others including problem in ICT application. The study has also forwarded some suggestions to improve the service conditions of the college libraries under examination.

A survey was conducted in order to determine the existing position of ICT application in some selected college libraries located in the valley areas of Manipur. The study revealed that only a few of the college libraries in the valley areas of Manipur provide ICT based services i.e. (automated). Therefore in order to improve the present situation in the college libraries of Manipur, the following suggestions have been made. The college authorities should try to know the importance of ICTs in today’s IT based society. So they should initiate to plan and implement automation in the libraries. Adequate training (such as ICT applications) should be given to the library staff and sufficient qualified staff should be employed in their libraries. Workshops, seminar, and other ICT awareness programs should be organized from time to time to appraise the staff regarding the trends in the IT age.

Dilli, K.T (2009) observed that the ICTs have revolutionized the activities of the library and information system. They are of tremendous help to both library professional and users in utilizing the latest techniques in information technology for effective knowledge organization paving way to the expert systems that serve as effective tools for gathering information. With the help of the latest technologies, the library managers can
handle the different aspects of library management such as storage, processing, retrieval and dissemination of information with ease and convenience. Besides, the information technology has enabled the users to have instant access to digitized information on library.

**Ezra, M and Ravinder, D (2009)** said Agricultural sector has been the backbone of the India, as it is the main source of economy for a large number of people residing in rural areas and it provides employment to 65% of the population. In this study the researchers found that the agriculture libraries have served the nation since the inception of Agricultural Universities and ICAR institution. The authors describe the services offered by the libraries of ICAR. It also presents the details about the electronic resources maintained by these libraries.

According to the authors the present environment in India in relation to availability of agricultural information sources to the various agricultural scientists will make us to think and act on two aspects of planning and Agricultural Information System. The first relates to the issues of accessibility and awareness of agricultural information sources available in various agricultural libraries and research stations of India. The second is providing access to nascent global information on agriculture i.e., providing access to national and international agricultural databases required by the agricultural scientists of India.

Further the authors point out that agricultural libraries today are using web technology extensively to provide dynamic services to the remote users. Hence there is a need for agricultural librarians to obtain expensive exposure with the ICTs to provide effective information services to the agricultural scientists to increase food production and to achieve self-sufficiency.

**Murthy, Lakshmi (2009)** expressed her views in the article, ‘Advances in Information and Communication Technologies’ (ICTs), According to her particularly internet technologies have changed the mechanism of information access and
dissemination and ICTs have impacted all sectors including the agriculture sector. These technologies provide effective ways to transfer and improve information management paving the way to meet information needs more effectively. New tools are increasing the ability to access, store, process and disseminate information and giving a mechanism for sharing of information resources in a faster and more effective manner.

The study covers agricultural institutions in the public sector in the state of Andhra Pradesh. These institutions include National Institutions, viz., Institutions under the Indian Council for Agricultural Research (ICAR), Ministry of Agriculture, Ministry of Rural Development; State level Institutions; State Agricultural University, State Department of Agriculture, State Agricultural Management and Extension Training Institute (SAMETI), and district level institutions viz., Krishi Vigyan Kendras (KVKs). Respondents included researchers, extension managers and other faculty from the above-mentioned agricultural institutions at national, state and district levels. The respondents were selected using a random sampling technique. Problems in assessing information on the web, as expressed by the respondents across institutions include information overload on the web, scattered information, lack of frequent updating and lack of coordination among agencies. However, they find the web, user friendly to assess.

Naved, Ahmad and Nishat, Fatima (2009) carried out a study of the social sciences researchers’ use of ICTs in the Aligarh Muslim University (AMU). A well-structured questionnaire was used to collect the relevant data. The study shows that researchers use a variety of ICT products and services for their research work as these products prove very helpful in finding needed information quickly and easily and also help the researchers to access, manage, integrate, evaluate, create, and communicate information more easily. The study also identifies lack of training and technical knowledge to use ICTs as the major hindrances faced by the researchers in AMU. The paper recommends proper training and guidance for use of ICT-based technologies for the optimum utilisation of these services by the researchers.
Sharma, Chetan and Singh, Lakhpat (2009) emphasized that use of ICTs has become increasingly important in research libraries nowadays. In the electronic age, survival of libraries without ICT is in danger. The study was restricted only to research libraries of the State of Haryana which have ICT based resources and services. The situation of available IT infrastructure and e-resources in these libraries was explained in this study. The management, control and retrieval of respective services and resources were also some of the highlights of the study.

Slyvester O. Anie and Edwin I. Achugbue (2009) carried out a study to assess the views of the librarians about the impact of ICT policies on the utilization of library resources and services in Nigeria. This study was an attempt to make an inventory regarding the available information technologies being used for library operations, to identify the advantages and disadvantages arising from the adoption of ICT policies for library services and to determine constraints preventing the adoption of ICT policies.

A survey methodology was designed for this study and a questionnaire was used to collect data from respondents. A total of ten questionnaires were distributed to the staff of each of the selected federal university libraries in Nigeria. Provision was made in the questionnaire for the respondents to suggest ways to improve library resources and services through ICTs. Some of the following suggestions made by this study are as under:

- There is a need to train and retrain library staff to utilize ICT for library operations.
- Students and library staff of the university need to be computer literate.
- Adequate financial provision should be budgeted for library development and operations.

Sharma, Parul (2009) discuss various issues related to ICT in the library with respect to current digital era. Library and Information services (LIS) are being transformed by technology and they have to adopt these changes to meet their users’
changing needs and growing expectations. Rapidly developing ICTs are creating new opportunities and challenges for traditional libraries. The new trend world over is move towards digital collection. This paper discusses the problems, issues and solutions that may help in deploying ICTs in library training and higher education. The authors argue that it is imperative for the librarian to become ‘digitally literate’. Based on the collected data some suggestions are put forward here for improvement.

- The state of ICT applications in India is at the low-end stage. So it is suggested that the authority concerned should give priority to improve the situation.
- To access library catalogues and databases of other libraries through other library networks.
- To improve the efficiency of library functions.
- To improve the cost effectiveness of library operations.

Thus the adoption of ICT should not be considered as a luxury, but as an added tool to provide the information services, effectively to fulfill the complex needs of the users.

Walmiki and Ramakrishnegowda (2009) in a survey of University libraries in Karnataka outline the status of ICT infrastructure of selected Six University libraries. A structured questionnaire was used to obtain data from the University librarians. The data collected include details of hardware infrastructure like availability of servers, PCs, laptops, printers, scanners etc. Software facilities for automation of housekeeping operations, digital library activities are included in the survey. Availability of campus LAN and Internet facilities to provide access to information sources are detailed in the study. The survey reveals that most of the libraries lack sufficient hardware and software facilities and Internet with required bandwidth. The University libraries according to authors have to plan, implement and develop ICT infrastructure to exploit the benefits of digital information environment.
**Dhanavandan, S** (2010) revealed that the ICTs are a diverse set of technological tools used to communicate, create, disseminate, store, and manage information. A computer network consists of a set of communication channels interconnecting a set of computing devices or nodes that can communicate with each other. An attempt has been made in this study to identify the usage of CD-ROMs and Internet among the engineering graduates in Engineering Institutions in Cuddalore District in TamilNadu. It was found that most of the respondents are using in one-way or the other various types of communication media tools.

**Kumar, Sampath B.T and Biradar, B.S** (2010) observed that the use of ICTs in 31 college libraries in Karnataka, India by analyzing the ICT infrastructure, status of library automation, barriers to implementation of library automation and librarians' attitudes towards the use of ICT. The survey carried out using questionnaire, observation and informal interview with selected college librarians show that 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, a majority expressed the need for appropriate training to make use of ICT tools.

**Latha, J.K.** (2010) stated that the ICTs has revolutionized the concept of libraries. Each and every library is slowly getting digitized. An ‘electronic library’ comprises e-collections, services and infrastructure to support lifelong learning, research, scholarly communication as well as preservation of our recorded knowledge. Their article throws light on the factors that will necessitate the special libraries to get digitized, as well as the definition, need, advantages and disadvantages of electronic libraries, the requirement for building a e-library etc. It also emphasizes the role of the librarian in the new environment. This study attempts to examine the impact of ICTs on acquisition of knowledge among scientists with reference to India Council of Agricultural Research (ICAR), Council of Scientific Industrial Research (CSIR), Indian Council of Medical Research (ICMR) and private / Non Governmental Research Institutions.
Mohamed, Haneefa. K and Abdul Shukoor C.K (2010) report that the ICTs literacy among the library professionals of Calicut University. The study includes only the library professionals in the central library and departmental libraries of Calicut University. A structured questionnaire was used to collect data. The study reveals that the Professional Assistants are more ICT proficient in ICT skills than the Junior Librarians and Assistant Librarians. The use of ICT-based resources and services, library automation software, and general-purpose application software is high among the junior professionals than the senior library staff. The use of digital library and institutional repository software is very low among the library professionals. A majority of the professionals had confidence in routine ICT and Internet tasks, and need training or orientation in library automation, digital library and institutional repository software.

Rao, Y. Srinivasa and Choudhury, B.K. (2010) maintains, computer infrastructure plays a critical role in the academic system by fulfilling various needs related to meeting, teaching, learning and research. Libraries are an integral part of the academic system. Adequate infrastructure facilities support academic libraries share their resources and services in an effective way. National Institutes of Technology, (erstwhile Regional Engineering College), are prime institutions and benchmark for technical education in India in the field of engineering, science and technology. This paper discusses the computer infrastructure facilities available at National Institutes of Technology across India and current status of computer-based library services offered by these institutions.

The study was undertaken to identify the current state of computer and information (CI) facilities at NIT Libraries. The study indicates that the south zone libraries are richer than the other zone libraries with respect to CI facilities. From the observations, it is concluded that, many NIT libraries could expand their infrastructure capacities to offer better services to students, researchers, faculty and staff. However, the influence of CI facilities on library services clearly indicates that further improvement is necessary. The NIT libraries should lay more emphasis on online resources like e-journals, OPAC, CD-ROM, Audio / Video communication and support services rather

**Sivakumaren, K.S.** (2011) conducted a study with to identify infrastructure facilities, ICT based software and various types of electronic resources available in University Libraries in Tamil Nadu particularly in Chennai. The study was carried out in ten university libraries. The study indicates that University Libraries taken for the study must increase number of computers. The University Libraries must increase the number of computers available to enable the users to maximize the usage of ICT-based resources and services. The digital library service is one of the most useful services in the university library. Users can access digital resources using a number of different open source digital library software packages. The libraries should implement digital library software. It is found that no library implemented digitization software. It is very useful to digitize rare collections such as older and out of print editions.

**Tiwari, Braj Kishore and Sahoo, K.C** (2011) development in ICTs has influenced the libraries for its overall betterment. Libraries use ICT to manage communication facilities, housekeeping operations, user's services, standardization and extension of library activities. University libraries of Madhya Pradesh (MP) are in transition stage in the use of ICT. The study is based on librarians' views and attempts to reveal the real scenario of university libraries of MP as regards to its infrastructure, use and problems to develop and maintain the ICT in libraries. Survey method has been used in the study to find out the present ICT infrastructure in University libraries and use of ICT in terms of communication facilities, collection, hardware, software, networking infrastructure, housekeeping operations, user's services, training and problem areas of the university libraries. The paper concludes that university libraries of MP are in a developing stage in its infrastructure and use of ICT. Lack of proper planning and supervision and frequent change in ICT are the basic hurdles in successful development of ICT in university libraries in MP.
Fourie, Ina (2013) expressed to set the scenario for pursuing options to find a balance between ICTs, information retrieval systems (IRS) such as databases, library catalogues, repositories, Google Scholar, digital libraries, portals, search engines and the users of these systems. Whose needs are served: the real users' with contemporary needs or the perceived users and their research tasks whom we intensely studied in the early years of databases and computerised information services? Design/methodology/approach. The contribution is written against the background of research from information retrieval and information behavior. Findings - Although developments in ICT open a wealth of opportunities to study and serve the needs of a wide spectrum of information users, IRS are often on the surface level still very traditional in the needs they service: analytical information seeking according to planned search strategies, browsing, monitoring trends and changes through alerting services and RSS, and encouragement and support for authors to publish. Some are offering a bit more, but little aimed at the under-graduate soon to enter professional workplace. Originality/value - Although there are many publications on databases and other IRS and their users, and numerous ones on information behaviour I am not aware of other reports on the latest services aimed at specific user groups, and which focus on the need to consider the totality of their work and everyday life worlds.

Shilpa, SU (2013) in their research paper discusses the present status of agricultural libraries in India and suggest measures for their upliftment by sharing library resources through networking and consortia. They also highlight the role of agricultural library associations, consortia benefits, Indian agriculture libraries net work etc, and give a brief description of national consortia such as INDEST, UGC INFONET, CSIR etc and International consortia such as Un consortium, National digital library for agriculture USA etc.

The brief review of literature presented above reveals that most of the studies aimed at usage of ICT, user needs, and ICT based services available in the libraries. Though several studies have focused on different information systems, Agricultural Information System attracted to the attention of very few scholars. Therefore the present
study is taken up in order to know the agricultural information system available in Hyderabad and also users’ awareness, usage etc. Only few studies touched institutes related agriculture. Since these institutes are contributing to research and their information is helping the farmers in their cultivation, an attempt has been made in the present research project to conduct a study on the agricultural information system in Hyderabad.

There are several issues, which needed to be addressed further. Most of the studies dealt with agricultural information services in the libraries and users usage but this study is combination of agricultural information systems and users usage. This type of combination helps to know the actual situation in the libraries and users usage. It will further help to know the loopholes and strengthen the areas in the agricultural information systems. This chapter has presented a review of literature. In the ensuing chapter an attempt will be made to highlight the national and international ICT based agricultural information products along with the profiles of the libraries surveyed in this research project.
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