CHAPTER – II

REVIEW OF RELATED LITERATURE
2.0 Introduction

The unprecedented growth of medical information in electronic formats, computer and communication technologies, and the rapid advancements in the Internet technologies and services have transformed the mode of information services, delivery and usage. Hence, medical librarians in order to keep the library relevant in the electronic age may be willing to make fundamental changes to traditional library roles and undertake new roles (Dollar et al., 2007) Medical librarians may take on different roles such as information architects, knowledge engineers, decision support specialists, web designers, online publishers, and database and network creators (Burrow et al., 2001; Funk, 1998; Homan and McGowan, 2002; Matheson, 1995; Scherrer and Jacobson, 2002).

However, it is obvious that different positions in a library demand a different amalgamation of these skills and roles. According to Medical Library Association (MLA) (2007) no one individual can master all knowledge and every desirable skill and competencies, but every organization will require collective expertise in all areas. Medical librarians will emphasize different areas of expertise at different points in their career, with specific needs varying over time from assignment to assignment and by institutional setting.

To assess the quantum of literature available on the related topic of study and to understand the trends in Information Technology (IT) skills among library professionals, efforts have been made to collect the appropriate and relevant literature. For this purpose e-journals with full text available under UGC-INFONET digital library consortium, including Wiley InterScience, Emerald, Science Direct, and JCCC; Scopus, LISA, and Medline have been browsed. In addition to this, information available on Directory of Open Access Journals (DOAJ) and other searchable databases were selected and recorded. The presentation is divided into three parts viz, global scene, Indian Scenario, and Iranian situation.
2.1 Studies on Information Technology Skills and Related Issues: A Global Scene

This section gives glimpses of some recent studies carried at global level on IT skills and issues related to it, particularly in academic health sciences libraries and its impact on libraries and librarians.

2.1.1 Information Technology

Studies on IT application, and implications are presented are presented in the following sections.

2.1.1.1 Application

Chisenga (1996) conducted a study to examine the availability and use of information technology in libraries in South Africa. Findings revealed that information technology is generally underutilized due to the lack of appropriate training among the library professions in the country.

Barlow and Graham (1999) investigated the use of information and communication technologies (ICT) in industrial and commercial libraries. A good number of the organizations used computers for some aspects of their library and information services. ICT was used for a range of office and other applications including email, word processing, spreadsheets, presentation packages and database management systems.

Khalid (2000) reports that a range of factors has provided facilities for the maximum use of technology in libraries. He conducted a postal survey which revealed a lesser use of technology in university libraries of Saudi Arabia (less than the UK and Malaysia for example) for housekeeping and bibliographic searching. A literature review points out a number of reasons for this lower use, for example, non-existence of a national information policy and the lack of trained staff. Use can be increased by taking initiatives by professional organizations and government agencies. Among these, planning of technology, implementing information policy, developing broader awareness
for the use of technology in libraries, establishing staff training and development and user education programs are particularly important.

Mulimila (2000) contends that information environment of a given society currently revolves around the ability to use and manipulate information technologies. He reviewed the trends of information technology (IT) applications in East Africa government-owned university libraries using a questionnaire and review of available literature. It was revealed that the extent of IT applications in those libraries was very limited. Financial resources and lack of trained manpower in IT remained the most critical obstacles in the application of information technology in East Africa government-owned university libraries.

Magara (2002) in his investigation on application of IT by different organization in Uganda found that academic institutions are basically using information technologies for research purposes through searching on the Internet. E-mail services are the most frequently used activities by most of the organizations. He recommends that services need to be integrated into the organizations’ strategic objectives coupled with knowledge and skill.

2.1.1.2 Implications

Gallimore (1999) says that networking has implications for staff who need to acquire new skills and knowledge to work effectively in the new networking culture. New posts, such as Internet coordinator and Web master will need to be created for producing and managing electronic information content. Librarians will increasingly be seen as publishers of information and developers of local interfaces to networked information resources. The manager should be well informed of about IT and network issues, who actively uses systems instead of leaving them to experts. The role of the manager is to promote awareness of networked services, to disseminate knowledge, organize training for staff, and deal with issues of organizational change in an effective way.
While highlighting some of the major trends and changes that have impact on the academic law library, Patrick and Stant (1999) report that future changes are likely to include taking more advantage of the increasing availability of information online, allowing students to access information from their homes or workplaces, more cooperation between libraries, and training students especially in information technology skills.

Shafique (2007) reports that the electronic environment at the 21st century will demand a range of skills from librarians. Technology alone cannot help bring about the required changes. Attitudes, practices, and policies need to change if libraries are to truly benefit themselves and their community of users by the application of new technologies.

Ameen (2011) examined challenges and opportunities the twenty-first century has brought to librarianship due to the emerging academic culture, and growing use of information and communication technologies (ICTs) in Pakistan. He argues that Librarianship in developing countries is being significantly affected by the ongoing ICTs developments from basic infrastructure to collections to services to needed human resources. A change brings certain challenges and opportunities. All stakeholders need vision and preparedness to turn challenges into opportunities. Instead of getting chaotic on facing a sudden change, they need to foresee and initiate change in a more meaningful, productive way. He is of the opinion that the overall growth in librarianship is much faster in Pakistan since the beginning of the twenty-first century, and the future will be even brighter for all those who know the art of going with the flow.

2.1.2 Information Technology Skills

In this section presents works on IT skills for LIS professionals in general, medical librarian, hospital librarians, academic and public librarians.

2.1.2.1 LIS Professionals in General

Barden (1997) argues that the information worker needs to have extensive skills in the use of technology. This does not simply mean the ability to use a PC to access the Internet, or the ability to use CD-ROMs to gain access to the constantly growing number
of enormously valuable storage devices. The level of technology and network management skills required by the modern information worker includes: the ability to utilize the PC to provide added value to clients, the ability to analyze the network requirements of users—both internal and external users—the ability to be technological gatekeeper for an organization’s information resource management.

Garrod (1998a) claims that a portfolio of skills is required by library and information services staff to enable them play a full part in the electronic and networked environment, but these skills can be acquired by those with the desired personal qualities and who are provided with a working environment which is conducive to personal and professional development (Garrod, 1998b).

Houghton (1999) highlights the growing need for trained and skilled staff in areas such as Office software, Internet awareness, and local area networking.

Xu and Chen (1999) investigated 133 job advertisements for systems librarians in American libraries in 1996-1997 to examine the increasingly important role that systems librarians play in the ever-changing information environment, and to identify the knowledge, skills, and qualifications of systems librarians expected by employers in various types of libraries. Results showed that although systems librarians in different types of libraries may play different roles and have different emphases in their duties, the responsibility and knowledge requirements for them are generally expanding, systems librarians are not only technology experts but also managers and coordinators. Employers expect system librarians to have a strong computer and network background. Over two-thirds of the positions in public and academic libraries and more than half of the openings in other libraries require MLIS/MLS degrees.

Fourie (2004) focuses on a selection of new roles for librarians, including expected knowledge and skills, and how to prepare for these. He argues that librarians are part of a global world that is increasingly being shaped by electronic networks and Information Technology (IT). They can predict new roles by assessing changes in their environment, the potential effect and ways to reposition themselves. Scenario building, literature reviews, situation analysis, speculation and forecasting may be used. He opines
that librarians have a good idea of what they can offer, but are often unable to reposition themselves in time.

Gosine-Boodoo and McNish (2005) studied the impact of particular environment of today's professional librarians upon their skills capabilities. Librarians' perspectives reflected similar zones of skills insecurity viz, IT and managerial skills.

Ansari (2007) discusses the role of librarians in cyber/digital environment and their duties to perform in digital atmosphere with digital resources. Multifaceted role of librarians is increasing their job responsibilities. We can say that their work is further increased with expertise of information and communication technology. Ultimately job titles are also changing. Now librarians are called Cybrarian, knowledge manager, information professional, library service provider, knowledge navigator, information system librarian, web master etc.

Kavulya (2007) undertook a study to investigate the types of skills, knowledge and values that are needed by LIS professionals in Kenya if they are to fulfill the current information needs of the society, operate efficiently with the fast changing ICTs and above all fit in the highly competitive information sector job market. This included making a general assessment of current LIS courses in Kenya so as to identify any shortcomings and make appropriate recommendations.

Omekwu (2008) explores the traditional and emerging roles of cataloguing professionals in a global networked information environment. While emphasizing the vital role of cataloguers as content and system managers, software specialists and information retrieval system designer, he enumerates more than 23 roles for forward-looking cataloguing professionals.

Mathews and Pardue (2009) examined the IT skills employers deem essential by conducting content analysis of randomly selected job ads from ALA’s online JobLIST over a five-month period. Findings revealed a substantial need for web development, project management, system development, and system application.
Kloppenborg and Lodge (2010) investigated the types of skills library managers think their staff should possess as their organisational culture alters to meet the demands of a changing internal and external Technical and Further Education (TAFE) environment and user needs. Of the library managers, 64 per cent strongly agreed that finding and using print and online resources was an important skill to possess; 93 per cent agree that library staff should maintain a healthy work-life balance; and 79 per cent agreed that staff should understand the performance standards relating to their position.

Jabr (2010) conducted a study to explore the Omani information professionals’ perspectives toward a list of competencies that they are effectively participating in and agreed with for managing their information institutions, resources, services, and others related to their attitudes toward the use of technology and their professional personality. Data analysis revealed that Omani IPs are generally carrying positive perspectives toward the list of different groups of competencies, but are less concentrated on and agreed with competencies related to new tools and networks and satisfaction measurement.

2.1.2.2 Medical Librarians

Law (1996) enumerates the challenges in the networked environment as technology adoption, copyright, scholarly communication, and the role of professional medical societies. Four major areas in which medical librarians have skills valuable in this environment are: the organization of knowledge, quality assurance of information, custodianship, and user instruction.

In a survey conducted by Blackwelder and Dimitroff (1996) Medical librarians and health professionals alike ranked good communication as the most important skill for librarians' success. Computer or technological skills were ranked fourth by librarians but second by health professionals.

Funk (1998) observes that Medical sciences librarians must be able to convert information into knowledge for the clients they serve and be significant partners in managing institutional information networks. Medical librarians must also create these databases and networks.
Scherrer and Dorsch (1999) report that Evidence-Based Medicine (EBM) extends the librarians’ role beyond identification of the literature to involvement in practicing and teaching quality filtering and critical appraisal of the literature. These activities require librarians to acquire new knowledge and develop new skills.

According to Killingsworth (2000) with the proliferation of end-user databases, Medical librarians shifted their focus from supplying information to teaching patrons how to find the information themselves.

To extend their services beyond the four walls, academic medical librarians now are assisting in developing user-friendly databases and anticipating the information needs of patrons by providing personalized web pages, and creating portals that link patrons to the resources pertinent to their interest (Scherrer and Jacobson, 2002). Several authors maintain that Medical information professionals with the knowledge and skills of effective ways of organizing information should not get marginalized. Indeed medical information professionals’ new roles require a background in information systems and Web design, an ability to organize both human and information sources and an understanding of the human-computer interface (Braud, 2003; Creth, 1993; Homan and McGowan, 2002).

Scherrer (2004) conducted a study to examine the academic medical reference librarians’ viewpoint on how their roles have changed over the past ten years and what challenges these changes present as viewed by both the librarians and library directors. Findings revealed that reference librarians largely changed i.e. they are teaching more, engaging in outreach, and designing web pages in addition to providing traditional reference duties. Librarians have identified areas for focusing efforts in lifelong learning. Adult learning theory, specialized databases and resources needed by researchers, ever-evolving technology, and promotion and evaluation of the library are areas needing attention.

Holst and Funk (2005) assessed the current roles of Medical librarians in expert searching in their institutions. Results revealed that the majority of respondents believed that their searching skills had improved over the past 10 years. Most indicated that
continued training was very important in maintaining and improving their skills. Respondents promoted searching services most frequently through orientations, brochures, and the libraries Web pages.

While emphasizing on measurable performance standards for recruitment and retention, Tompson (2006) says that for a practice-based profession, librarianship has been slow to adopt competencies and standards for practitioners in a majority of settings. He points out that notable exception such as medical librarianship can provide some models.

A number of “Competency Studies” have been conducted in the field of library and information studies during the last decade. Most of these studies were generally concerned with the “Common Competencies” needed by LIS professionals. Medical Library Association’s (MLA) (2007) professional competencies are divided into seven domains namely, health sciences and health care environment; leadership, finance, communication, and management theory and techniques; health sciences information services; health sciences information resources management; information technology and systems; curricular design and instruction; scientific research methods, analysis and interpretation.

Tu (2007) in his email-based survey found that effective information retrieval, including formulating search strategies, online searching, and using indexes in print and electronic formats as the most important skills set required for effective medical virtual reference services.

According to Dollar et al. (2007) to keep the library vital in an electronic age, medical library staff must be willing to make fundamental changes to traditional library roles and to take on new roles. They also report that the transition from print to electronic resources means better services to library patrons and helps advance the research and patient care.

Santra (2007) in her study among academic medical librarians in Malaysia found that expertise in searching specific medical information was missing, awareness of the
skills and knowledge of the emerging roles was poor and training and education to specialize in the field was limited.

Lynn (2011) argue that the ongoing conversion from print to electronic resources affords medical librarians the opportunity to create state-of-the-art flexible collaborative spaces, areas for individual study, archival repositories, and information technology help desks in the library. As librarians evolve to embrace new roles and services, they assume more complex responsibilities. In-depth knowledge of electronic licensing agreements, close alignment with the institutional mission, information technology infrastructure, informatics, information literacy, e-science, metadata creation, and open access are some of the areas in which librarians can play a proactive role. The future is bright if librarians collaborate to define a new vision, purpose, and mission.

2.1.2.3 Hospital Librarians

In the changing health care scene health sciences librarians can perform a more pivotal role in introducing new users to the increasingly sophisticated information environment of health care. Braud and Wood (1993) point out that Information Technology is transforming the nature of health sciences information and its management, thereby altering the traditional responsibilities of health sciences librarians. This transformation is the basis of the core issue facing health sciences librarians today, i.e. lack of educational system providing librarians with the characteristics needed to function in a drastically changing health care environment.

Makowski (1994) examines the development of clinical medical librarianship programs in the past decade and the potential role of clinical medical librarian both as intermediary and an instructor for end users.

Lindberg (1996) says that today’s modern librarian must not only be adept at using the Internet but must become familiar with computerized information in all its forms; images; full text databases; and factual data banks

Palmer (1996) opines that health professionals are being increasingly encouraged to base their decisions on evidence from the literature. Many clinicians realize that they
need help in searching the major databases, such as Medline, for systematic reviews and other evidence of clinical effectiveness and that they require support in making effective use of electronic databases and text retrieval systems.

Davidoff and Florance (2000, cited in Shearer et al., 2002, p. 22) presented for consideration a reinvention of clinical librarianship which was first proposed in 1960s. They asserted that this new credentialed professional termed as informationist, would be so much part of the health care team that patient care would not be complete without their services. Informationists would possess the skills of librarians, as well as, those of biostatisticians, computer scientists, and medical professionals.

The Internet has created new opportunities for librarians to develop information systems that are readily accessible at the point of care. Burrow et al. (2001) report the multi-year process used to justify, fund, design, develop, promote, and evaluate a rehabilitation prototype of a point-of-care, team-based information system (PoinTIS) and train health care providers to use this prototype for their patient care and education activities. They assert that PoinTIS is a successful model for librarians in the 21st century to serve as publishers of information created or used by their parent organizations.

Clinical medical librarians stepped out of the library and joined the patient care in the early 1970s. Now they are present to report the literature, take literature search requests and most importantly perceive information needs at morning reports, bedside rounds, or weekly conferences. Clinical medical librarians also teach online searching in an evidence-based way and help patient care team members with other research needs (Brown, 2004).

Brettie (2008) asserts that user education, information skills training, information technology skills training, health informatics training, information handling skills, information literacy, literature searching training and finding information for evidence-based practice are all terms used to describe the teaching undertaken by health librarians.
2.1.2.4 Academic Librarians

Morgan (1996) points out that the rapid developments in computer technology as well as economic changes have made it clear that the familiar role of librarians as information intermediaries must undergo immense change if librarians are to avoid being displaced by a variety of contenders. He grouped competencies that the future academic librarians should possess into four areas: credibility with academic staff; teaching and training; IT-related skills and management skills.

In the Asia/Pacific region, we can also find some works on needed competencies. Rehman *et al.* (1997) interviewed 60 top and middle-level managers of academic libraries in Malaysia to validate a list of competences (knowledge and skills) required by entry-level academic librarians. They identified sets of foundation and operational competences viz., knowledge of collection, automation, information technology, database design and management. The competences to work with different information systems and resource-sharing consortia were perceived to be a need for future years.

Several scholarly writings have focused on the issue of inevitability of ICT literacy among academic librarians and other personnel within the framework of the university libraries in the emerging ICT era. Morgan (1998 cited in Adeyoyin, 2006, p.698) asked rhetorically, “In today’s world, why would anybody trust a librarian, whose profession is about information and knowledge, who hadn’t mastered a computer?”

Much advice and predictions regarding the recommended “Competencies for New or Future Roles” appeared in research findings, one of which is a comprehensive listing of skills and characteristics compiled by Feret and Marcinek (1999) from the findings of a 1998-1999 Delphi study. Its focus was the academic library's role and librarians' skills in the year 2005 as envisioned by 23 experts from ten countries.

Anwar and Al-Ansari (2002) report a questionnaire survey on the current continuing professional development practices, perceptions of academic library employers about skills that need to be developed in their staff in the six Gulf Cooperation Council countries. It was found that a systematic staff development program is generally
lacking. Current continuing professional development activities focus on immediate institutional needs. Information and communication technology skills preferred relate to automated systems, electronic resources, networking, and multimedia applications.

Kargbo (2002) enumerates the advantages of IT application in academic libraries as ease and rapidity of communication at low cost. He suggests that librarians must start to consider what roles they should play in providing or using technologies. As information is increasingly distributed in electronic form most of the traditional roles of their libraries are being gradually superseded, it is important for these librarians to begin to participate in the development and application of these technologies in their respective library institutions.

Mahmood (2003) provided a list of 75 competencies needed by entry-level academic librarians. Validated by 70 chief librarians of universities and post graduate level colleges from the public and private sector, ten competencies were recognized as the most essential competencies, seven of which belonged to Information Technology category. The validated list was then compared with the curricula of LIS programs in Pakistan.

Abu Bakar (2005) in his study on IT competencies in academic libraries in Malaysian, found that 12 out of 13 key IT competencies were recognized as the most essential competencies needed by information professionals, and yet the respondents were not exposed to these competencies.

Ameen (2008) conducted an investigation to study the perception of university librarians regarding the needed competencies for collection managers in the emerging digital paradigm. He found that although the university libraries of Pakistan are gradually adopting a digital paradigm and providing access to hybrid collection, collection managers would not perceive fully the competencies needed to manage hybrid collections.

Leong (2008) conducted a case study to identify strategies to enhance change readiness and professional competence in Australian academic reference librarians in a
time of organizational change and challenge. Findings revealed that reference staff responded positively to enhance opportunities to influence directions. They willingly took responsibility, developed new skills for a changing environment, and demonstrated effectiveness in new ways.

2.1.2.5 Public Librarians

Shimmon (1995) assesses the future of libraries and librarians regarding the impact of technology; presents evidence for and against their decline. Concludes that librarians have a secure future in cyberspace, but only if they adapt to their changing environment.

Kajberg (1997) states that the situation is that although many librarians have learnt to handle the new technologies during recent years only few library professionals possess the profound technical knowledge required for introducing IT and developing IT-based services in public library settings. He points out that the range of skills needed by today’s public library professionals includes skills in developing local full-text databases. Intranet design, designing innovative multi-media based Online Public Access Catalogs (OPACs), electronic publishing, homepage creation, and Internet navigation and searching.

Heinrichs (2008) investigated the public library directors’ perception of the importance of professional job candidates having information technology skills as indicated by external certification in software productivity tools. Results supported a positive response to the need for information technology skills and external certification of applicants by public library directors.

2.1.3 Information Technology Skills

This section presents works on IT skills needed for areas such as library automation, digital libraries, Web archiving, electronic resources, chat referencing, Web-based services, library/Web 2.0, learning management systems, metadata, and IT skills training.
2.1.3.1 Library Automation

Based on information and knowledge today, it has become necessary for information workers to take the issue of automating libraries seriously for purpose of facilitating communication, information sharing, research and communication. Several studies have extensively explored automation of libraries in different countries.

While enumerating the major problems associated with managing a library automation project Ondari-Okemwa (1999) opines that management and information technology skills should be emphasized in whatever training programs may be initiated in a bid to overcome major problems associated with managing a library automation project.

In a study Rajinder and Buttler (1996) attempted to provide a general profile of African libraries, with particular attention to their present status with respect to automation and the use of technology. Findings revealed that almost all respondents from the three countries surveyed are in favor of automating their libraries, but the major problems were: lack of funds, and lack of training in librarianship and particularly in the field of automation of libraries and the use of computers.

2.1.3.2 Digital Libraries

Choi and Rasmussen (2009) examined qualifications and skills required of professional positions involved in digital resources, services, and technologies as changing aspects in academic libraries. Data was collected from job advertisements for digital library positions posted in College and Research Libraries News during the nine years from 1999 to 2007. The study verified shifts in staffing needs and required qualifications with digital focus on collections, services, and technology applications in academic libraries. It was also revealed that job requirements for librarians are changing, and are including abilities that require knowledge of current technology, such as Web page design and Internet searching, and that employers seek job candidates with interpersonal and communication skills as well as technological skills. The results confirm that a digital librarian is an emerging position in academic libraries. LIS educational implications and further investigations to validate the results are suggested.
2.1.3.3 Web Archiving

Murray and Hsieh (2007) undertook a study to identify the needs and issues librarians, curators, end users, and content providers have in relation to Web archives, a needs assessment study was undertaken in 2005 as a part of the Web-at-Risk project, a three-year collaborative research effort of the California Digital Library, the University of North Texas, and New York University. The project’s 22 curators who will build collections of Web published materials using the Web Archiving Service (WAS), as well as 43 librarians and archivists who primarily work in academic libraries, 7 university researchers, and 7 content providers participated in needs assessment activities that included an online survey, focus groups, and interviews. The issues and challenges these groups face are summarized and the need for collaborations among libraries and government entities for preserving Web-published materials is stressed.

2.1.3.4 Electronic Resources

Aschroft and McIvor (2001) report that for electronic journals to become a significant alternative to the print version, there needs to be a recognition that the introduction of electronic journals will impact on working practices and staff requirements. They opine that librarians are increasingly needing technical competence, at least to the level of being able to refer problems to network supervisors, advise users on browser configurations to enable e-journal access and on the use of library software, they also need to know how to deal with faults and follow up ongoing problems.

Kiondo (2004) in her case study of UDSM (University of Dar es Salaam) library reports that developing IT skills for selection of e-resources is important and this has been done consistently at the UDSM. Staff members have been trained in Internet searching skills, evaluation of e-resources and in e-resources management software packages. Continuing education is achieved as skills are acquired as more staff engage in related activities of searching, selection, and acquisition of e-resources.

Murdock (2010) are reviewed and analyzed requirements for electronic resource positions in libraries advertised between the years 2000 and 2008 according to how they
relate to developments in electronic resource management tools and standards taking place during the associated time periods. The research revealed that the job requirements for electronic resource personnel have not changed significantly over these years, despite overwhelming changes in quantity of material and quality of system resources and despite the recommendations of the Digital Library Federation's Electronic Resource Management Initiative documentation, which is used as a focal point for this study.

2.1.3.5 Chat Referencing

Luo (2008) in her study tried to identify the essential chat reference competencies. She surveyed the practitioners' perceptions of chat reference competencies reported in the literature. A prioritized competency list was produced based on the survey results. The most highly rated competency area was “Reference interview skills”. The second-highest rated competency area was “Familiarity with electronic resources”. “Customer service mentality” was in the third place of the eight competency areas. The mean score for the competency area “Online communication skills” ranked fourth in all eight areas. In the fifth place of the competency area ratings was “Ability to work under pressure.” The two areas of technical skills–“Mastery of basic computer techniques” and “Familiarity with chat reference applications”– ranked in the sixth and seventh place, respectively. The least important competency area was “Instructional role.”

2.1.3.6 Web-Based Services

Hilderbrand (2003) argues that with few exceptions, the focus of most Australian public library websites continue to be as an information resource about physical libraries. Even the web catalogue, which is included on most public library Websites, refers to materials held in a physical library and while users may be able to reserve items on the Web catalogue they still need to visit a library branch to retrieve the materials. He examines some of the issues that public libraries need to consider in order to rethink the way that the Web can be better used to provide interactive, real-time online services, issues include: commitment of staff and financial resources to online services; developing and maintaining web technology skills, reclaiming the Web from IT departments, and individual efforts versus collaboration.
2.1.3.7 Library/Web 2.0

Web 2.0 services, the new generation of Web services, akin to libraries connect users to the information they need. These services which have effects on library services provide LIS professionals with new technologies and paradigms that can be adapted to enhance library services. Moreover, because of extensive use of these services, there are cultural changes affecting library users' information seeking behaviors, communication styles, and expectations (Naika, 2008). As a result the term library 2.0 has been introduced into the professional language of the librarianship to discuss these changes.

Turning their attention to potential advantages of Web2.0 tools for education, Lemley and Burnham (2009) state that increased use of Web2.0 tools in the curricula of medical and nursing schools creates an exciting opportunity for increased collaboration between medical librarians and faculty. They assert that librarians, by virtue of their related training and experience are perfectly situated to train faculty in the use of Web 2.0 tools.

Library literature on RSS feeds has been plentiful in recent years. Johnson et al. (2009) report on a new kind of RSS-based current awareness service with improved efficiency which saves users' and staff's time in enabling Library for the Health Sciences.

While enumerating the disadvantages of the previously used methods of current awareness services, Vilkins and O'Carroll (2009) outline Library and Research Services use of blogs and RSS feeds as an information delivery mechanism to clients in a special library in Australia, Queensland. They describe how blogging technology and its implementation has evolved from being a simple current awareness tool, to being a staple work tool and in the process has enabled the library staff to create a collection of extremely valuable resources for both clients and library staff.

2.1.3.8 Learning Management Systems

Jackson (2007) conducted a study to assess librarians’ understanding of the LMS as a teaching and learning tool for information literacy. In 2005, 171 California State University (CSU) instruction, information literacy, and reference librarians were
surveyed. WebCT and Blackboard were listed as the most popular learning management systems on CSU campuses. When asked to rate their proficiency level in using a Learning Management System (LMS), a slight majority of the eighty-six respondents declared themselves average while very few considered themselves very high. Librarians who had received LMS training were more likely to rate themselves average to very high in proficiency. The study indicates that utilizing the Learning Management System (LMS) to enhance information literacy remains underdeveloped.

2.1.3.9 Metadata

Lee–Smeltzer reviewed various efforts from many different communities (library science, information science, computer science) that attempt to better organize Internet resources and provide more effective methods for resource discovery. These approaches range from traditional cataloging in the library world to the recent metadata movement and the development of the Resource Description Framework (RDF) for building an architecture that enables the co-existence of different data structures. She is of the opinion that the skills of analyzing the intellectual content of a work, classifying it, applying subject headings to it, and arranging the library’s collection logically are easily transferred to the organization of information stored electronically. There are issues, however, yet to be resolved and standards to be developed for organizing and managing this new medium.

2.1.3.10 Training

While discussing issues related to professional development and manpower training in information science in Kenya, Ocholla (1995) says that it has been common particularly in developing countries, to create information centers and institutions before developing the information professionals. She indicates that manpower development and training arrangements needs to adhere to a checklist of strategies, which would include at least: identification of the trainees; identification of trainers; development of the training program or curriculum; developing the resources for training; deciding on training methods to be applied; deciding on how long the training would take; deciding on the
venue of the training; costing the training; deciding on how the training would be assessed and evaluated; developing a system for training the trainer.

Kirkpatrick (1998) conducted a questionnaire-based survey on the training of academic library staff on information technology. Results showed that the availability of training was highest on automation. In general, both professionals and paraprofessionals had equal access to training. For all types of training individualized instruction by a coworker was the most common training method used, individualized training by an individual other than a supervisor or coworker was the next most common training method used. Workshops also were a method that libraries commonly used for training. The most frequently used training methods for both professionals and paraprofessionals were, in rank order, individualized training by a coworker, in-house workshops, and individualized training by a supervisor.

Mahmood (1998) reports the findings of a survey of continuing education activities in the field of library automation held in Pakistan during the years 1988-1996. These were mainly arranged and sponsored by professional library associations and foreign agencies, and were held in 13 cities covering all provinces and federal areas. Discusses problems faced in providing continuing education opportunities in Pakistan and makes recommendations to improve the quality and scope of events.

Cullen and Huanwen (1999) report on a survey carried out in libraries in Guangzhou (China) and Wellington (New Zealand) that investigated the use of technology to provide information services, the training that had been provided and areas where libraries felt there were still unmet needs for training. Although Chinese libraries were using similar range of technologies, training programs and needs varied between Chinese and New Zealand libraries.

Viiri (1999) carried out a study to identify the educational needs of the library staff of Finish Polytechnics. The educational needs identified by the library staff concerning four main topics (library work, leadership and management, information technology, and learning and learning environment), preferred methods of instruction was open and flexible learning and multiform teaching. The respondents were ready to spend
evenings and weekends on their studies and were willing to have distance modules, learning in teams and projects, and they were ready to use networks for their learning.

In the increasingly knowledge-based economy, information is a vital resource in economic, social and political life and skills of information handling in all sectors are more than ever in great demand (Mackay et al., 2001). The increasing demand for information has brought to the fore the question of the kinds of knowledge and skills that are needed by information professionals (Ochilla, 2000, Cited in Kavulya, 2007, p. 209.). As a result LIS training programs worldwide are reinventing themselves and developing new curricula to produce information professionals with right knowledge and skills to match social needs, the labour market and developments in ICT.

While providing a framework for assessing the information literate individual, the American Library Association (2001) stresses on how information literacy relates to information technology skills.

Spacy et al. (2003) suggest training as an appropriate means of enabling staff to effectively cope with technological change. They assert that successful training needs to appreciate that staff have different needs and so prefer different training methods.

Adeyoyin (2005) conducted a questionnaire-based survey to ascertain the levels of ICT literacy among library staff in a range of Nigerian libraries. The conclusion reached was that Nigerian university library professionals and paraprofessionals should acquire an enhanced level of ICT literacy, both staff training and ICT infrastructure were recommended.

Bawden et al. (2005) examined the approach to the education and training of librarians in digital libraries and competencies required for creating and managing digital libraries and assessed these competencies vis-à-vis LIS education in UK and Slovenia.

According to King et al. (2006) ICT training for library staff should be built around problem solving and trouble shooting, rather than generic skills in order to match the kinds of queries encountered in the front line of libraries.
While emphasizing the importance of IT training, Adeyinka (2008) says that libraries in the developing countries should consider sending their librarians, who do not have knowledge of IT, to IT training in order to remove fear and anxiety hindering them from developing a better attitude towards the use of IT in their libraries.

Adeleke and Olorunsola (2010) opine that if librarians are to function effectively in the present age, the manual processes or methods will have to give way to information and communication technologies (ICT) and a computer driven environment. Ensuring this requires training and retraining on the part of the participating librarians, who must be ever willing to keep abreast of recent developments in the field of library and information science (LIS).

Shepherd (2010) describes the planning, design, implementation and evaluation of a staff-development and training pilot programme for professional librarians at Rhodes Library, South Africa. The course, which covered basic information-finding skills using a variety of research databases and offered an introduction to concepts in twenty-first century academic librarianship, was presented using course management software in a face-to-face environment and required homework exercises and the completion of a two-hour final test. Results of the project demonstrated the urgent need for such development programmes for professional library staff. The final test results indicated below average database search skills and an inability to think laterally. An unexpected finding was a lack of IT competencies. Important lessons were learned with regard to course-construction, content and timing.

Thomas et al. (2010) found that the modern academic librarian, besides the common attributes, should be technology-savvy and eager to learn and adopt any technology development for the benefit of users. Regular updating of professionals is sine qua non. In the Indian context, it is found that professional bodies like IASLIC did play a yeoman’s role in bringing India to the forefront of global librarianship. It is concluded that India does need a well-laid out policy and programmes of updating and equipping its librarians continuously and can benefit from the experiences of American Library
Cleveland (2011) discusses a philosophy of educating health information professionals in a rapidly changing health care and information environment. She argues that education for health information professionals must be based upon a solid foundation of the changing paradigms and trends in health care and health information, as well as technological advances, to produce a well-prepared information workforce to meet the demands of health-related environments. She concludes that interdisciplinary and collaborative relationships—which merge health care, library and information sciences, and other information-related disciplines—should form the basis of education for health information professionals.

2.2 Studies on Information Technology Skills and Related Issues: Indian Situation

Health sciences librarians in India, like their counterparts in other countries are facing challenge of new information technology which is penetrating into their libraries. To cope with this challenge satisfactorily acquiring new skills/competencies is the only way. With this background in mind an attempt is made here to discuss few studies on Indian scenario about information technology skills and related issues.

2.2.1 Information Technology: Application

Moorthy (2000) in his dissertation conducted a questionnaire-based survey to examine the extent of the use of electronic media in Indian libraries, the level of automation and the infrastructure available in libraries in India to meet the multifarious and ever-increasing information requirements. The study revealed that use of e-media is growing steadily despite various problems associated with it. It has been observed that due to the active involvement of library networks, library automation as well as database creation activities are at a satisfactory level and the situation is changing for the better.

Chetana (2002) in her doctoral thesis attempted to investigate various digital infrastructure facilities made available to the users of information in the institutions of higher education, as well as on the whole in Mysore. Results showed that higher
education institutions are trying to adapt themselves to the new mode of information delivery in a phased manner.

Nyamboga and Kemparaju (2002) undertook a study to examine the availability of different information technologies (automation, networks, electronic mail, online searching, CD-ROM searching, telefacsimile, personal computer applications and the World Wide Web or Internet) in six university libraries in Karnataka state. They found that university libraries in Karnataka still lag behind some other Indian universities in the applications of information technology, but the introduction of Internet access is an important step forward.

Gulati (2004) discusses the status of information and communication technologies in Indian libraries with special reference to special libraries and the efforts made by various institutions to propagate e-information products and services. Highlights the consortia efforts in India like JCCC (J-Gate Customer Content for Consortia), INDEST consortium (Indian National Digital Library in Science and Technology), CSIR e-journal consortia (The Council of Scientific and Industrial Research) and UGC Infonet. It further discusses digitization efforts in India at NISCAIR, NEW DELHI (National Institute of Science Communication and Information Resources), IIITM, Kerala (Indian Institute of Information and Technology Management), C-DAC, Puna (Centre for Development of Advanced Computing) and the Digital Library of India.

Singh (2006) in a general review and survey of new development areas in special librarianship in India, reports that in most Indian special libraries features such as Internet resources and other electronic/digital resources, subject gateways and networks and consortia are fast gaining acceptance. New trends include the development of librarians’ own websites and sophisticated application of digital technology among others.

Haneefa (2007) carried out a study to examine the application of information and communication technologies (ICT) in special libraries in Kerala, India. Results indicated that library automation in special libraries in Kerala was largely commenced during 1990-2000. CDS/ISIS was used more in libraries than any other software. The library catalogue found to be the most popular area for automation. Most of the libraries were
hampered by lack of funds, lack of infrastructure, and lack of skilled professionals to embark on automation of all library management activities and application of ICT.

Dhanavandan et al. (2008) undertook a questionnaire-based study to identify usage of information and communication tools among the library professionals in Tamil Nadu. It was found that all the respondents are using in one way or the other the various types of ICT media tools including Internet and mobile which are significantly influencing the users community.

Sampath Kumar and Biradar (2010) examined the use of information communication technology (ICT) in 31 college libraries in Karnataka, India by investigating the ICT infrastructure, current status of library automation, barriers to implementation of library automation and also librarians’ attitudes towards the use of ICT. Findings revealed that application of ICT in Indian college libraries had not reached a very high level. Lack of budget, manpower, skilled staff, and training were the constraints for not automating library activities.

2.2.2 Information Technology Skills: LIS Professionals

Babu et al. (2007) examined the ICT skills among librarians in engineering educational institutions in Tamil Nadu. Respondents had fair knowledge of library automation softwares. For online facilities most of library professionals were preferring OPAC/Web OPAC, it was followed by CD-ROM search, email, Internet surfing and search engines. Regarding technical skills of library professionals creating a catalogue and metadata were the prime choices of the respondents. Self-study was a popular mode among librarians as medium of learning and updating their knowledge and skills of ICT, it was followed by methods such as attending workshops/seminars, through colleagues, and training at workplace. Workload, negative attitude of the higher authorities and limited opportunities were mentioned as the major constraints to acquiring ICT skills.

Kumar et al. (2009) performed a questionnaire-based study to reveal the state of ICT literacy among staff of Banaras Hindu University Library System ranging from professionals, semiprofessionals, and nonprofessionals. Results revealed that out of 41
professional staff 22 (53.65%) are ICT literate and 34 (46.34%) are illiterate, out of 88 semi professional staff only 34 (38.63%) are ICT literate and 54 (61.36%) are illiterate, and out of 57 non professional staff only 26 (28.86%) are ICT literate and 47 (70.14%) are illiterate. They conclude that professional, semiprofessional, and nonprofessional staff of BHU library system should acquire enhanced level of ICT literacy through both training and adequate infrastructure.

2.2.3 Information Technology Skills:

Here, works on IT skills required for the areas of library automation, digital libraries, institutional repositories (IR), e-journals services, bibliographic database creation, Web technologies, email-alerting system, along with IT skills training are presented.

2.2.3.1 Library Automation

Thapa and Sahoo (2004) attempted to investigate the problems and prospects of automation in special libraries in Jabalpur district in Madhya Pradesh, India. Findings revealed that only 60 percent of the special libraries opted for automation. The lack of computer trained professional staff; hesitancy and lack of attitude towards automation and unsatisfactory library software are some of the major forces for slow progress. However, 60 percent of the special libraries opting for automation, shows that the libraries have a mind to adapt to new changes and that the other libraries will follow suit.

While describing the development of the library management system, e-Granthalaya, for public libraries in India, Matoria et al. (2007) outline the challenges and potentials of a full-scale deployment of this software at a national level. They point out that public libraries in India are lagged behind others in the world in the provision of adequate facilities, automation of back-end operations, collection development and access, and in the use of ICT for housekeeping operations as well as for user services.

Hanief (2009) shares the experience of automating a college library in one of the smallest states of India having limited staff and resources. He describes the experience of the Islamia College of Science and Commerce, Srinagar library in implementing
automation with the use of CDS/ISIS and SOUL software. He concludes that automation could be initiated with limited infrastructure and staff provided that the staff is enthusiastic.

Mulla et al. (2009) carried out a survey of engineering college libraries that have computerized their operations and services to provide an implicit view of experiences undergone by the engineering college libraries in computerizing their library operations. It was observed that 13.73 percent of libraries are not automated due to lack of computer facility, financial problems, lack of trained manpower and very less library collection.

2.2.3.2 Digital Libraries

Sreenivasulu (2000) stresses that the multimedia nature of the next generation of digital libraries requires the digital librarians (DL) to be essentially a type of specialist librarian who has to manage and organize digitization, storage, access, digital knowledge mining, digital reference services, electronic information services, search co-ordination, and manage the archive and its access. The article envisages the professional education and training for digital librarians in the management of digital information systems. It denotes the DL’s interface functions, roles, skills and competencies for the management of digital information systems in the important areas of imaging technologies, optical character recognition, markup languages, cataloguing, metadata, multimedia indexing and database technology, user interface design, programming, and web technology.

While explaining the development and challenges of digital libraries, Sharma and Vishwanathan (2001) emphasize the role of librarians and their support staff in conversion of traditional libraries to digital one. They question the provision of adequate training and the necessary guidelines for the librarians to execute a smooth transition from traditional to digital. They recommend that it is vital to look at the colleges and institutes training future librarians to see whether they have common syllabi and training methods to meet the additional requirements for digital libraries.

Deb and Kar (2005) describe the setting up of The Energy and Resources Institute (TERI) electronic library in New Delhi, India to provide better services for the
researchers to access the structured information from the desk top. They explain that TERI Electronic Library (EL) was created to provide access to online resources, online e-journals, electronic documents and virtual resources. In TERI, electronic services like Current Awareness and Alert Services apart from establishing a virtual information centre has further supplemented the EL.

2.2.3.3 Institutional Repository (IR)

Sutradhar (2006) describes how an institutional repository (IR) was set up, using open source software, at the Indian Institute of Technology (IIT) in Kharagpur. He provides evidence on how to set up an IR and how to create different communities and under each community, many collections using the Dspace software. It was found that setting up an IR is very simple but its maintenance is very difficult. It is necessary to have the computer knowledge, particularly in Linux operating system environment and must be dedicated to carry out the IR administrative activities like registration, permission authenticity, submission and grant, installation of the updating version of the software, etc.

2.2.3.4 E-Journal Services

Patra (2006) in her case study seeks to discuss her experience of providing e-journal services to the scientists at the Central Glass and Ceramic Research Institute in Kolkata, India. The author shows that providing training to the staff as well as library users and managing services of the e-journals were the most important issues. The author also shows that e-journals have added enormous resources to the collection and improved the service of the library, enhanced access to journal literature, and decreased the demand for photocopy services as well as document delivery of single articles.

2.2.3.5 Bibliographic Database Creation

Chandrakar (2003) says on the one hand the world has reached the last stages of library automation, while on the other; the internet has revolutionized it with different concepts such as the electronic, digital, virtual and library without walls. Now professionals are researching knowledge management, Internet cataloguing, copy
cataloguing, metadata, Z39.50 retrieval protocol, and resource sharing in the context of inter-library loan, document delivery services, and Internet services through Net etc. Unfortunately in an Indian context, libraries are still in the process of the automation and digitization of their resources. Lack of training, lack of skilled manpower, lack of manuals, lack of advisory services and technology change are mentioned among others as barriers to progress in these areas in university libraries in India.

2.2.3.6 Web Technologies

Jeevan (2000) reports that the Indian Institute of Technology at Kharagpur has begun developing an information facility called KELNET (Kharagpur Electronic Library on the Net) as a means of coping with spiralling cost of information resources and the increased demands being placed on library services. Describes the development of KELNET and looks at prospects for its continuation.

2.2.3.7 E-Mail-Alerting System

Munnolli (2005) accounts that E-mail-alerting system of online databases is a new trend catching up fast with researchers. Results of auto-run set queries are informed through e-mails as ‘alerts’ to the registered user. Even though e-mail-alerting systems are quite popular amongst Internet users, their inherent advantages remain unexplored in the Indian scenario. An effort to explore all such features available in the ScienceDirect online database has been made in his paper. He presents the process of registration for activating e-mail alerts, customizing a home page, selecting favorite journals, search alerts, journal issue alerts, citation alerts and search history with screen shot examples. The study emphasizes the fact that librarians and information Science professionals should take lead roles in unveiling all such possible features available in various online databases. They should also make efforts at informing the user community of the utility of such features in a bid to enhance the research output.

2.2.3.8 Continuing Education and Professional Development

While emphasizing the need of continuing education for LIS professionals in this modern era of information and technology, Desgupta and Satpathi (2006) explain the
activities of Continuing Education and Professional Development (CEPD) in developed and developing countries. They enumerate the role of various associations and institutions of India such as Indian Library Association (ILA), Indian Association of Special Libraries and Information Centers (IASLIC), All India Institute of Medical Sciences (AIIMS), Indian Institute of Management (IIM), National Social Science Documentation Centre (NSSDOC), which are actively connected with programs of continuing education. Highlight some of the universities and academic institutions which have centers and departments of continuing education and critically analyze the work and activities of eight universities in West Bengal based on a survey work.

Raina (2005) in her paper reports that in keeping with the vision of its parent institute, and also in line with its mission, the library at the Indian Institute of Management Lucknow (IIML) has been conducting innovative continuing professional development programs for professionals engaged in the library and information sector, for the last over ten years now. More than thirty such programs, on areas like: (i) Quality Management, (ii) Marketing, (iii) Information Technology Applications, (iv) Human Relations, and (v) Communication, in the context of library and information systems and services, benefiting over six hundred top and senior level professionals, have already been conducted.

Nyamboga, (2004) reports the results of a study of training opportunities for library and information professionals in India and how a selection of Indian university libraries are providing information skills and information literacy programs for their users. Library and information professionals also need continuing professional development courses as new ways of providing information resources developed.

Ramaiah and Moorthy (2002) carried out an investigation to assess the impact of continuing education programs, provided by national and international bodies on LIS professionals in India. The study revealed that a majority of the participants are updating their professional skills through CEP courses organized by different institutions. Almost half of the participants were attending these courses basically to improve basic
knowledge/skill and improve the services in their libraries. 95 percent agreed that they have achieved their objectives of attending the CEP course.

2.3 Studies on Information Technology Skills and Related Issues: Iranian Situation

Library and information professionals today need to acquire knowledge and skills in information technology as the services of more and more libraries are now focusing on information technology, especially in educational environments. Application of IT in academic environment in Iran has increased gradually in the recent decades more particularly in academic Health Sciences Libraries. With such concerns in mind, an attempt has been made here to cover few studies on Iranian scenario about information technology skills and related issues.

2.3.1 Information Technology: Application

Davarpanah (2003) in his study on university libraries in Iran reports that due to language barriers, an overwhelming number of these libraries have utilized commercial library-oriented packages developed in the country. The findings also indicate that 90.20 percent of libraries had computerized cataloguing systems and 82.35 percent had CD-ROM databases, other popular application of technology available to the library services include computerized periodicals system (49.02 percent), local area library networks (49.02 percent) and national or in-house databases (32.78 percent). Internet services, electronic mail, online databases, and automated library services, such as circulations and acquisitions exist in 31.37 percent of surveyed libraries.

Nakhoda et al. (2005) suggest that providing equal opportunities in IT training/education for library staff will improve and promote services provided by libraries and information centers.

Keshtkaran et al. (2008) conducted a study to examine the impact of IT in administrative departments of central building of Shiraz University of Medical Sciences. Data was gathered using a questionnaire which included identification data of respondents, time and duration of utilization of IT in their job functions, and its advantages if any. A good number of respondents reported rapid performance of
operations, reduction of cost, and better quality as advantages of IT utilization. MSWord was the most highly used software and the least used software included online communication such as (chat, video conferencing, etc.).

Mohsenzadeh and Isfandyari-Moghaddam (2009) performed a study to define the status of the application of information technology in academic libraries (Shaheed Bahonar University, Kerman Medical University and Islamic Azad University). Two kinds of questionnaires were distributed one for librarians and the other for library staff. Results showed that the level of application of information technology in Kerman academic libraries is acceptable, but they should improve their status to match with ever-increasing demand for better library services at universities; the most important problem and serious difficulty is lack of educated librarians, which needs a suitable investment and planning.

2.3.2 Information Technology Skills

In this section studies on IT skills needed for LIS professionals, and medical librarians in Iranian situation are presented.

2.3.2.1 LIS Professionals

Mazinani (1998) assessed the required skills of 333 managers and 915 librarians employed in 424 university and specialty information centres. Results showed that more than half of the organizations surveyed use personnel who are graduated in fields other than librarianship and information science. About half of the librarians and managers had not completed any library education. The respondents pointed to technology changes as the major factor requiring new skills. It was found that professional librarians and managers with a BA or higher degree, especially in LIS, need courses in information technology, library software, specialized reference sources and databases, whereas those with associate degree or lower need training in general and specialized reference, selection and acquisition of audiovisual material and software, cataloging and organizing audiovisual material, and knowledge of databases and library software.
Fathian Dastgerdi (2009) contends that librarians need new skills to deal with the knowledge-based environment. These include knowledge management, information and computer skills, scientific and practical skills, global and cultural awareness, and ability to support educational programs of different organizations. The development of ICT has brought new methods to librarians’ continuing education. The library website, intranet, remote and electronic education, organizational publications, as well as congresses and visiting other organizations are some new methods of librarians education.

2.3.2.2 Medical Librarians

Soudbakhsh and Farzin (2006) opine that at recent years medical library and information centers are witness of major evolution in their activities and services and this has caused the librarians feel that in addition to their traditional activities need to achieve modern knowledge and skills.

2.3.3 Information Technology Skills

In this part IT skills related to areas such as computer literacy, information literacy, database creation, digital reference services, and electronic resources are presented.

2.3.3.1 Computer Literacy

Moarefzadeh and Sannei (2006) on investigation of librarians’ training needs in university libraries of Iran found that although librarians use computer in their day to day work, many of them lack the adequate computer literacy skills. They demonstrated that in order for these librarians to keep up with the information technology innovations, an in-house continuous training program is needed for them.

Safahieh and Asemi (2010) undertook a study to assess the level of computer literacy skills of librarians in the University of Isfahan, Iran and attempted to examine their avenue of computer literacy, software used, benefits derived from computer and problems militating against effective usage of computers. The investigation showed that the majority of the librarians do not yet possess a good level of computer skills and even
their long duration experience of computer use has not necessarily improved their level of computer literacy. They suggest that the findings can be utilized by library managers in order to organize and offer regular training programs to train or retrain librarians with the latest advancement of information technology.

2.3.3.2 Information Literacy

Pournaghi and Abazari (2008) performed a comparative questionnaire-based study on librarians working in central libraries of Iran and Shahid Beheshti Universities of Medical Sciences and Tarbiat Moddares, Tehran, and Shahid Beheshi (non-medical) Universities. Findings show that LIS professionals working in central libraries do not yet possess a good level of information literacy skills. The authors suggest that managers organize and offer training programs on information literacy skills and English language.

2.3.3.4 Digital Reference Services

Sohili and Khalili (2008) undertook a study to investigate the need or lack of need to reference librarians within the digital domains based on the views expressed by LIS authorities in Iran, and to identify the qualities required for such librarian should a need for her/his expressed. The research was based on analyzing the results obtained by the checklist devised by the authors. Findings show that there is a significant relationship between employing ICT and need for reference librarians. LIS experts in Iran believe that introduction of ICT, especially Internet and WWW not only did not decrease the need for such librarians, but has caused the reference librarians to attain more importance and better status than before.

New technologies have transformed information delivery. Widespread use of the Internet has changed user expectations. Users expect to receive information quickly and without having to visit the library. One way of doing this is chat. Chat reference has become an important library service. Libraries in Iran should also implement chat reference services. To accomplish this, librarians need training. Therefore it is necessary to foster the required competencies within Iranian LIS curricula (Noorizadeh Ghasri and Dehghani, 2009)
2.4 Summary

This chapter gives glimpses of recent issues surrounding IT skills and related areas in India, Iran, and other countries. An overview of the literature shows a few studies on skills of the library professionals published in India and Iran. The recent studies especially in developed countries tend towards information technology skills, for all types of librarians including medical, hospital, academic, and public librarians. Whereas, the Indian scene reveals that the studies focused mainly on IT application, IT training, whilst in the Iranian scenario most works concentrated on computer and information literacy, and IT application. So far, few survey regarding IT skills among medical librarians in Iran or India has been reported. To that extent, it is justified that the present study is the first of its kind and no such similar work has been reported so far.