It is widely accepted that a library is a collection of sources, resources, and services, and in the more traditional sense, a library is a collection of books and in other words, a collection of useful material for common use for people using information in different fields such as medicine, engineering, computer science, mathematics, statistics, electronics and biology.

The explosion of information communication technology (ICT) since the beginning of the 20th century has been rendering manual-based library system in academic, research, special and public libraries less relevant. This is because using and implementing information communication technology in the library depends largely on the attitude of library staff toward this digital age. There is no doubt about the fact that significant changes have taken place in libraries in the developed world due to the application of information communication technology (ICT) in automated cataloguing, circulation systems, online information retrieval, electronic document delivery, and CD-ROM databases.

Attitudes have been used to represent perceptions of library staff on the value attached to IT in libraries - technical processing, collection organization and user services. It represents the conceptual value of these technologies in the minds of the library staff, not the values of these technologies. The study of attitude in general begins with a decision between two competing theories about the nature of attitude as a state of readiness, intervening variable between a stimulus affecting a person
and that person’s response. In other words, a person attitude prepares him to react to a given stimulus in one way rather than in another.

It is desirable that all library staff would need to have a positive attitude towards IT in the current changing environment. It should be noted at this point that there are many variables which seem to have relations with or influences on the attitude of the librarians towards the use of ICT.

In the light of the increasing number of engineering colleges every year in Andhra Pradesh, it is felt necessary to study the attitude of the library professionals working in the engineering colleges towards Information and Communication Technology in meeting the needs of their clientele. A well planned research project basically requires a well defined and delimited aspect or aspects to be studied, and they should be as precise as possible. A clearly defined objective of the study is basically more important. Accordingly, the present study is proposed with the following objectives.

2.1 Objectives of the Study

The following are the main objectives of the present study:

1. To understand the IC technology and network infrastructure available in the engineering colleges located in the north coastal districts of Andhra Pradesh
2. To understand the levels of knowledge and use of the library professionals on various aspects of IT like computer technology, network infrastructure, communication media technology, audio-video technology, printing and publication technology and electronic resources
3. To identify the training needs of these library professionals in the area of Information Communication Technology
4. To understand the opinion and attitude of library professionals towards IT and related aspects
5. To examine the differentials in the opinions and attitudes of the library professionals with regard to some selected aspects of IT, by selected background variables
6. To find out the difference in the opinion and attitude of professionals working in NBA accredited and non-accredited engineering college libraries
7. To find out the difference in the knowledge, use, opinion and attitude of professionals working in engineering college libraries located in the three districts.

2.2 Hypotheses

The following are the hypotheses formulated in the present study:

1. There are differences in the availability of IC technology and network infrastructure in the engineering colleges among the three districts.
2. There are differences in the availability of IC technology and network infrastructure in the NBA accredited and non-accredited engineering colleges.
3. The attitude and opinion of the library professionals vary among the males and females.
4. The attitude and opinion of the library professionals vary with the age group.

2.3 Study Design

The objective of the present study is to bring out the differences in the level of knowledge and use and opinion and attitude of library professionals working in the engineering colleges located in the north coastal districts of Andhra Pradesh towards
the much needed Information Technology. Accordingly, the study is designed to be
narrative with a clear comparison of the different aspects of study in the light of
location, accreditation of the college, age and sex of the library professionals etc.

2.3.1 Methodology

In order to elicit the needed information for the present study, it is decided to
employ the most popular survey method. In the present study, it is decided that a
complete coverage of library professionals will be done in a sample of engineering
colleges from selected districts in Andhra Pradesh. And the respondents covered will
be - all the library professionals (Librarians, Assistant Librarians and Library
Assistants) currently working in all the engineering colleges selected for the study.

2.3.2 Sampling Procedure

Before picking up sample for the study, a list of all engineering colleges in
Andhra Pradesh is obtained. As per the official list of engineering colleges in Andhra
Pradesh (2011-2012), there were 711 colleges. As already mentioned, these
colleges are of two types – University Colleges and Private colleges.

These 711 colleges are spread over the 23 districts of the state across the
three distinct geographic zones i.e. Telangana (340), Rayalaseema (103) and
Coastal Andhra (268). For the present study, the three north coastal districts have
been selected. The main logic in selecting these three districts viz. Srikakulam,
Vizianagaram and Visakhapatnam is quite simple – Visakhapatnam is a developed
district and Srikakulam is a backward district while Vizianagaram is in between these
two.
There are 268 Engineering colleges in the Costal Andhra region of the state and the number of these colleges in the three north coastal districts is 58 which accounts for about 22 percent of the engineering colleges in the region and 8 percent of the total engineering colleges in the state.

In the next step, the contact details of the 58 engineering college libraries along with the details of all the professionals working in these colleges are obtained to facilitate data collection plan.

Schematic Presentation of the Sampling Procedure:

There are 10 Engineering college libraries in Srikakulam district. There are 16 Engineering College Libraries in Vizayanagaram district. There are 31 engineering college libraries in Visakhapatnam District. It should be mentioned here that, out of the 32 colleges in Visakhapatnam district. The A U engineering college
for Men and Women are commonly used the A U engineering college library. It is considered that one library for two engineering colleges. Hence the number of engineering college libraries in the Visakhapatnam district is 31. The total college libraries covered in the present study comes to 57.

At the time of this survey, there are 116 library professionals currently working in the 57 engineering college libraries. The number of engineering colleges in each of the selected districts along with the number of professionals working in their libraries and the coverage particulars are shown in Table-2.1.

<table>
<thead>
<tr>
<th>S.No</th>
<th>District</th>
<th>Number of Engineering Colleges</th>
<th>Number of library Professionals Existing</th>
<th>Number of library Professionals Interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Srikakulam</td>
<td>10</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Vizianagaram</td>
<td>16</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>3</td>
<td>Visakhapatnam</td>
<td>31</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>57</td>
<td>116</td>
<td>116</td>
</tr>
</tbody>
</table>

As per the study design all the 116 library professionals have been covered for the present study ensuring the proposed complete coverage.

2.3.3 Research Tools

In Social Science research surveys, the questionnaire method is widely used for data collection. In the present study also, this most popular and widely used ‘Questionnaire method’ is employed for eliciting the needed information. Keeping in
mind the objectives of the study a questionnaire has been designed covering all aspects of the study. This questionnaire has been pre-tested and modifications were incorporated basing on the pre-test experience. The final questionnaires were used for data collection.

The researcher has personally visited all the 57 college libraries selected for the study and recorded the needed information.

2.3.4 Analysis

Data thus obtained were entered into a personal computer and were analysed using SPSS 15.0 v software. The study is designed to be mainly narrative or descriptive and this does not require elaborate statistical treatment of the data.

The analysis is mainly focused on bringing out comparison between the three districts, accredited and non-accredited colleges, gender and age of the professional. The comparisons are made mostly by frequencies expressed in terms of percentages and where ever required chi-square and t-tests are applied.

The observations are supplemented by graphical presentations wherever possible for a better understanding of the observations made. The observations were neatly tabulated and presented sequentially maintaining the logical flow of the analysis.

2.4 Review of Relevant Literature

For any research work review of available literature is the most important aspect. Review of literature is a measure, stating the recent output on a particular area of research and organized in a helpful sequence to strengthen the present
research techniques. The main objective of the review of literature is to understand the research activities that have taken place in a particular discipline in general and the area of research in particular. As the present study is aimed at understanding the professional attitudes towards information technology, all the available and relevant literature available was reviewed here. The contribution of academicians, information scientists, research scholars, and library professionals on this topic in various dimensions has yielded invaluable set of research output. The research publications over a decade period are covered and reviewed.

Gopinath, M.A.¹ (1990) identified that the human beings are one of the important factors in library management. The problems or complications faced by librarians are more or less same in any type of library. Increased access to knowledge is one of the issues that made the librarians to learn or improve the skills, particularly, information technology. The library professionals should act as a link between knowledge sources and knowledge seekers. To make the libraries user oriented, to satisfy potential users, to adopt with electronic media, to identify the services those can be offered at a price, etc. the library professionals should have training in traditional librarianship and I.T. oriented librarianship. The author noticed the developments in library profession such as generation of information in variety of forms, computer and communication technology, exchange of information, manipulation of information, etc. He suggested the following skills for professionals:

1. Knowledge of specialized reference sources.
2. Specialized analytical skills and techniques.
3. Collection Development
4. Library automation etc.
Malinconico\(^2\) (1991) opined that the libraries and librarianship is rapidly influenced by modern and electronic technologies. The new technologies and services in libraries and information centers will be controlled and managed, whom we call Librarians. The new technologies empowered the library professionals to do things qualitatively and quantitatively. The changes appeared in information infrastructure such as computer, telecommunication networks, increased use of mainframe computers for local library systems, access to additional information, databases through online public catalogues etc. have significant influence on professionals and their attitudes to set, along with changes in the environment. The author mentioned a variety of computer readable information sources, which requires training for the library professionals to use them properly. Further, the developments in information technology that are influencing access to information and its management etc., were mentioned and suggested suitable training programmes for the professionals. The creation of global village and the role of librarians in information handling was predicted. The urgency of learning computing and communication technology was rightly stressed.

Prem Singh\(^3\) (1991) expressed that change in any field is a continuous and inevitable phenomena, so also in library and information centers. The importance of Information Technology is rightly stressed consequently the traditional manpower requirement can be reduced. I.T. is an amalgamation of following technologies: (1) Computing Technology, (2) Data Communication Technology, (3) Document reproduction Technology. To solve many problems, such as information acquisition, information organization, information dissemination, space problems, etc. could be solved to large extent, if I.T. is applied in Libraries. Advantages through application
of I.T. are listed as: (1) Redundancies of depth classification, (2) enhance the productivity (3) Enhance the efficiency (4) Provision of quality information services, (5) Provision exhaustive information, (6) Use of National and International bibliographic data bases through networks, (7) Use of optical discs/compact discs, read only memory for faster access to information and saving of space. The author concluded that, training in new Information Technology skills are necessary for library personnel. Librarians are left with no option but to go for information technologies.

Haravu4 (1993) explained the library automation in India during the last ten years in which he discussed about the database development and information retrieval services in research libraries. A comparison was made on application of automation in academic, public and research libraries. He opined that the automation in academic libraries is far from satisfaction and the situation in public libraries in India is still low. Most of the research libraries are under pressure to develop more efficient services and to provide better services. Main focus is given to the in-service training of library professionals at regular intervals, there by the quality of services can be improved. The availability of library software packages in India was discussed and compared with commercial software.

The limitations of Indian software package are mentioned by comparing the software packages of the Western World. Most of the library professionals are becoming not only computer literate but quite familiar to system analysis, programming and the application of new tools and techniques for library management and information retrieval.
Lambert (1994) stated the application of CD-ROMs and staff implications in Library and Information Centres. The advantages of CDs have increased its popularity to use the CD-ROMs in libraries and number of issues have to be attended such as financial sources, staff requirements, training, assistance to users, etc. The professional staff have to attend administrative as well as technical functions. To meet with the situation, the libraries have to introduce staff training programmes from time to time. The staff are required to be trained in the following aspects:

- trained on each CD-ROM before it is made available to users;
- competent on all publicly available CD-ROMs;
- trained on the complete range of options of each public CD-ROM;
- familiar enough with the structure and protocols of each CD-ROM;
- able to move quickly and effectively from one database to the next;
- able to advise end-users on which database to search for a specific topic;
- able to handle basic troubleshooting problems, such as difficulties with the printer.

To use different varieties of CDs, the professionals should acquire a variety of skills. So the professionals should be trained in this direction in order to make use of the CD-ROMs for information handling.

Sharma (1994) focused on personal transferable skills and the LIS professionals. The National Advisory Board for Public Sector, Higher Education stated the components on personal transferable skills, as:

1. Communication skills,
2. Ability to working groups,
3. Problem solving anda
4. Inter-personal skills.

The importance of professional transferable skills for LIS professionals was highlighted. These skills play a vital role in providing efficient services to the users. The importance of communication, social skills, which are necessary to understand the needs of staff as well as users were also discussed. Many library scientists opined that these skills are useful in library profession. These skills can be acquired either through formal professional education or on the job training or short-term courses, seminars, workshops etc. These skills help the professionals to acquire specialized knowledge and skills as well as their application in the profession. The author suggested that the above mentioned components should be included in the curriculum of Library and Information Science.

Gilligan\textsuperscript{7} (1995) made a proposal to prepare library personnel for the libraries of 21\textsuperscript{st} Century. She mentioned the future of libraries, besides traditional activities like collection, organization and preservation of information, the libraries have to give online public access, computerized circulation system, CD-ROM, Databases, etc. to get the information available in other libraries networking of libraries is necessary. Now the strength of the libraries will be rated on their services and ability to connect electronically with other libraries rather than on size of their collection. The changed role will become as information manpower or information navigator. The library staff should have communication skills through which they can educate their user, about the services available in their library.
Vijaya Kumar (1995) made an attempt to study the professional attitudes towards library computerization. This study was confined to university and special libraries in Andhra Pradesh. For this study, 8 university libraries and 19 special libraries were selected. The researcher selected 248 respondents from these two categories of libraries. It is reported that the age group of 31-40 years responded positively to the study. The following observations were made from the study:

1. The professionals with computer knowledge and without computer knowledge advocated for library computerization, no difference of opinions on library computerization by sex, a significant difference is found between professionals of academic and special libraries on user accessibility to computers.

2. There is a wide range of difference of opinion in computerization among professionals between academic and special libraries. By and large, the professionals of both categories of libraries shown keen interest to have the skills and knowledge of computerization.

Venkata Ramana and Vinod Kumar (1996) studied the influence of technology on libraries and network environment. Many changes are appearing in libraries due to the reasons like rising cost of materials, changing needs of users. They emphasized on library cooperation, through which the financial problems can be minimized. At this juncture, the use of information technology has become mandatory among participating libraries. So, the professionals in these libraries should be trained in library networks and communication technology.
Dhiman\textsuperscript{10} (1997) studied the use of computers and their application in libraries. The author listed in-house operations and services that can be automated in libraries as (1) Acquisition control, (2) Classification, (3) Cataloguing, (4) Serials control, (5) Circulation control and (6) Documentation and Information retrieval service. In order to attend to these activities technically qualified library professionals are necessary. Limited Professionals are having the knowledge of computers and computer operations. They suggested that sufficient funds should be made available for all activities of library automation including staff training.

Gupta\textsuperscript{11} (1997) stated that the library automation is one of the key activities in converting library service tools and practices to electronic based media. The information requirements of the users and its impact on libraries for using information technology are also discussed. The areas of automation in libraries are thoroughly studied and made an attempt to state the financial requirements necessary for hardware and software. The importance of information super highway, Internet facilities, digital libraries, and retrieval databases on tapes or CDs are also discussed.

Rehman and others\textsuperscript{12} (1997) conducted a study on ten largest special libraries in Malaysia, to understand professional competencies of 50 top and middle managers. They reported that future information professionals should have information service competencies. The professionals should be capable enough for literature search and provision of specialized services, sound knowledge in the information resources, in the areas of demand and use of resource sharing and networking. For acquisition activities and serials control, the professionals are
expected to have sound knowledge on computers. A plan was prepared and suggested for the training of library professionals in research libraries.

Sharma\textsuperscript{13} (1997) discussed the challenges before the librarians while introducing automation in libraries. The author stated that manpower development is one of the areas of automation. The dependency of the society on libraries is increasing for its information requirements. Supply of current, pinpointed, exhaustive information in the shortest possible time is possible only by using the facilities of information technology. So, it is the responsibility of the library professionals to update their knowledge to meet the situation successfully. The areas to be considered for automation in academic libraries are:

- Collection development;
- Serial control;
- Management of non-book material;
- Thesis and dissertation processing;
- Cataloguing and subject indexing;
- Reference and documentation service;
- Circulation;
- Financial management;
- Stock verification and inventory control;
- Co-ordination of different libraries; and
- Library statistics and research

To cope up with the changing situation, the professionals should develop the skills of Information Technology.
Tanija, S.K.\textsuperscript{14} (1997) stated that the Information Technology revolutions are greatly influencing the library profession. The information which is available in various databases can not be achieved and maintained by the users. So, the libraries should act as intermediaries to provide the information from the databases to users. To cope up with this issue, the library professionals should have to develop the skills that are necessary to handle databases. The emerging communication technologies also influencing the library services and have an impact on library profession. All these changing trends have direct impact on library profession.

Biswa\textsuperscript{s} and Kamila\textsuperscript{15} (1998) discussed the issues involved in information management in libraries. They mentioned the changes in the characteristics of information systems, styles of management attitudes, skills of staff. Discussion was centered on the skills, knowledge of the professionals to cope with information management in the light of information technology. Further, they advocated training for library staff.

Jackyoung\textsuperscript{16} (1998) from the University of Pittsburgh conducted a survey on attitudes of academic libraries towards computer technology and their relationship to library science education. They examined the relationships between the attitudes of academic libraries towards computers and their backgrounds. The purpose of the study was to identify:

1. The relationship between academic librarians’ attitudes towards computers and demographic variables;
2. The relationship between the academic librarians’ attitudes towards computers and their background in information science related course.
3. And the dimensions of academic librarians’ attitudes towards computers.

The results revealed that, the librarians showed positive attitudes towards computers. Experience with computers and the knowledge of a programming language were significantly related to a positive attitude toward computers.

Kaul\textsuperscript{17} (1998) emphasized the need for training of Librarians to meet the challenges, particularly in information access. According to the author, in the changed environment, the library staff should perform the following activities:

1. Dissemination of digital information rather than the custodian of information.

2. Expert in Information Technology rather than a passive learner.

3. Research in Information Technology.


Malaisamy\textsuperscript{18} (1998) has advocated the computer literacy for library staff. The author discussed in-detail about the importance of computer, Internet and computer education for library staff. For library management, the professionals should have knowledge on areas of in-house activities of Libraries. Most of the library staff had their training on traditional techniques. Therefore they need to be trained and exposed to modern electronic information technology devices with special reference to the effective way of storing and retrieval of information. He suggested that the library staff needs to be mentally prepared to accept knowledge and skills, which would bring qualitative change in their services to users.
Ramesh\textsuperscript{19} (1998) stated the technical problems in university libraries during automation, wherein the professional problems were also discussed. The author advocated for adequate training on IT applications. Further, emphasis is given to the continuous in-service training to library professionals to enable them to learn new knowledge. The management of libraries should provide financial resources for automation activities.

Rehman and others\textsuperscript{20} (1998) highlighted the competencies and validation for Library and Information Professional in changed market of information. The role of education, training and experience were viewed in changed environment. The distinction between library professionals and non-professionals has become unclear in Library Information Service field. They stressed the need for competency studies in Library Information Service. A survey was conducted in Malaysia to determine the competencies needed to library and information professionals. The competencies were identified from the review of literature and the validation of the competencies were also tested. They gathered information through interviews from selected respondents. The validated competencies provide an understanding of the desired core content of designed curricula of Library Information Service education through this method. The teaching methods are to be reviewed from time to time in order to train professional to meet the challenges in Library Information Service (LIS) profession.

Sharma\textsuperscript{21} (1998) viewed in his paper, that the information technology involves computers, electronic media, satellite, telecommunications and storage devices. It has made a deep impact on academic libraries. The emphasis of these libraries is shifting from collection to access. Academic libraries in India still face several
challenges due to the emergence of IT. He has listed all the challenges and dealt in
detail with one of the foremost challenges, i.e., manpower development in the
context of IT. The provision of raising facilities on IT in the library schools, inclusion
in curriculum, short term training facilities by other organizations, refresher courses,
participation in workshops, seminars, conferences, conventions, etc. were
discussed. For their own survival and for the survival of the profession, the librarians
have to play their role effectively in future. Otherwise they will be replaced by a new
group of professionals.

Subba Rao\textsuperscript{22} (1998) stated that information technology (IT) has radically
changed the nature of work in the library profession. Keeping the libraries in
institutions of higher learning (the IIT, Bombay) in mind, he mentioned the
approaches for developing new skills demanded by the introduction of IT in the
libraries. The IIT, Bombay library staff have responded positively to the changing
environment, maintaining a satisfactory balance with traditional print based
information sources and services. There is a substantial educational role for the
librarian in familiarizing users with the networked learning environment and it is
possible to carry out many of the activities associated with this role in cyberspace.

Bavakutty and Salih\textsuperscript{23} (1999) examined the need for application of IT in
libraries to meet the information requirements of the changing society. Unless the IT
applications are used in Library and Information Centers, it would not be possible to
satisfy the demands of potential users. Therefore, the authors stressed the need for
automation, particularly, manpower development. It is their opinion that enough
training and skill are necessary to the library professionals to cope up with present
situation. Further, reasonable emphasis is given to recruit qualified and well-trained
library professionals. The importance of in-service training is rightly stressed and the professionals should inculcate the habit of acquiring knowledge on the latest areas.

Chandran and Ramesh Babu (1999) studied the application of information technology and professional attitudes of academic and professional college libraries in Tirupati. To elicit information from the selected respondents a questionnaire was designed and distributed. It is reported that all the respondents expressed positive attitude towards IT and also opined that the IT applications will improve the quality of library and enhance the knowledge and expertise. The professionals expressed that IT will help in bringing integration within the organization. All the respondents have accepted that IT will improve the communication facilities, helpful to obtain the right information at the right time in the right place at the right cost and improve the status of the library and information centers. Further, 40 percent of the respondents expressed that IT applications would disturb the routine work in library and information centers, while the remaining 60 percent opined that the workload of library professionals would be reduced gradually. However, majority of the respondents expressed their interest in automating the library and information centers. All the respondents are of the opinion that the IT applications are necessary to manage the contemporary library and information centers. The study also stated that there are no sufficient funds to improve the IT infrastructure in library and information centers.

Gulati (1999) made an attempt to explain the relation between knowledge management in libraries and information technology. Knowledge management, according to the author, ‘brings together information and people’. Knowledge management stresses on using the information sources within the library as well as
outside. This situation requires that professionals should have knowledge on computers, knowledge of information technology, knowledge for information manipulation and retrieval etc. The author laid emphasis on infrastructure facilities necessary for information technology and skills required for staff in the IT environment. The advantages of commercial database, CD products etc., were discussed to cater to the information needs of users.

Misra\textsuperscript{26} (1999) advocates the use of CD-ROM as one of the means of electronic publications. The cost of conventional multimedia is increasing and the librarians have to opt relatively low cost machine, CD, DVD, floppy, magnetic tapes, etc. The author stated the features of CD-ROM and its storage capacity. The growth and development of CD-ROM database is discussed. It is reported that nearly 50 percent of the database belong to USA, followed by U.K. To make use of these electronic gadgets, the professional should feel the necessity of learning these skills.

Murthy\textsuperscript{27} (1999) highlighted the role of librarians in the area of information technology. The areas stated that are relevant to libraries from information technology are – computer technology, telecommunication technology, reprographic technology, printing technology and technical communications. The application of IT can be used in the following areas in libraries – collection development and acquisition, cataloguing and classification, circulation, reference work, preservation and conservation and archiving. The importance of information analysis and repackaging of information would become necessary in future, which requires a reasonable amount of knowledge of IT.
Newton and Dixon\textsuperscript{28} (1999) made an attempt on studying the new roles of information professionals. The objectives of their study are: (1) to examine how an effective infrastructure for accessing Internet resources could be developed in Scottish libraries (academic, public, health, commercial sectors); (2) to examine the issues related to skills, development of library staff for accessing and effectively using network resources. A considerable inconsistency in skills range across the problem in Scottish libraries was reported. This was due to the emergence of new technologies. They discussed the impact of rapidly changing information and communication technologies on information profession. The importance of handling Internet hardware and software is well recognized through which information on business, education, recreation, etc., can easily be downloaded. This would enhance the professional relevance. For professional development, proper organizational backing and financial support are necessary.

Nityanandam\textsuperscript{29} (1999) discussed the role of Information Technology in Science and Technology Libraries. The components of Information Technology are mentioned as – computers, telecommunications, storage technologies, databases, information systems, microforms, micro-graphics, expert system and video text and tele text, etc. The role of Internet in information flow and its impact on libraries is focused. The emergence of multimedia technology and its impact on the Science and Technology libraries is emphasized. The reasons for adopting multimedia are developments in computer and communication, need for information integration, digital libraries, distance learning, manpower training, information presentation, etc. To get the benefits of these technologies, the professional should cultivate the habit of learning and improving the skills regularly.
Sangam and Byadagi (1999) studied the impact of Information Technology on library services and products in which a reference was made regarding development of the professional skills. The importance of Information Technology in Library and Information Centres was thoroughly discussed. While discussing the requirements of the IT, they emphasized on the need for manpower development and motivation of manpower. The morale of the library staff will be increased, if the facilities of IT are applied in Library and Information Centres. They observed that most of the libraries would react negatively to any new system, particularly, library automation. Therefore, the attitudes of library staff should be re-examined and suitable measures should be taken to attract the library staff towards automation.

Sharma (1999) discussed the issues related to the challenges of Information Technology on library professionals. The IT is playing a vital role in satisfying the information requirements of the users. Therefore, there is an urgent need for library professionals to learn the skills of IT. Electronic media plays a vital role in satisfying the demands of the library users. The application of computers, telecommunication and optical technologies in libraries has influenced the disseminating methods and information sources to users. All these changes have made their impact on library professionals. He opined that library science profession is one of the professions, greatly effected by the developments taking place in Information Technology.

Most of the information sources are now available in electronic media, particularly, CDs and DVDs, which requires special knowledge and skills to use them. The role of library associations and library schools in training the library
professionals is also discussed. The library professionals should overcome the challenges raised by IT through learning the skill of IT.

Sharma, Jaideep\textsuperscript{32} (1999) focused light on personal transfer skills for library professionals to acquire skills and internal subject knowledge. The components of personal transfer skills are as follows:

1. Communication skills
2. Ability to work in groups
3. Problem solving
4. Interpersonal skills.

Personal transfer skills can be acquired through one or more of the flowing channels:

1. Formal Professional education.
2. On the job training
3. Short term courses/Seminars/Workshops, etc.

Sridhar\textsuperscript{33} (1999) studied the skills required to LIS professionals in the electronic world. A desirable emphasis was given to knowledge to be acquired on IT and skills to be developed by library professionals. The gap between knowledge and skills relating to Information Technology was discussed. The author mentioned three types of skills that are required to professionals in Information Technology environment.

The first one is technical skills. Professionals should have knowledge on access to sources of information. The professionals should also know the method of tailoring and re-packaging of information to meet the requirements of users.
The literacy of computers and knowledge of information is necessary to understand the skills of Information Technology. The LIS professionals should learn and develop skills required for handling IT products, particularly, keyboard, operating system, software, physical handling of gadgets, communication products, DBMS, RDBMS, data file management, generation of reports etc.

The managerial skills are equally important in the e-world environment, though the Information Technology skills are fundamental. The professional should exhibit leadership in use of electronic media. Further, the LIS professionals need to have managerial skills for information management in teams, which requires a sort of leadership. The domain of librarianship itself is being altered and distinction between professionals and non-professionals was blurred with the increasing use of computers and latest developments in Information Technology.

Sharma\textsuperscript{34} (1999) discussed about information technology in special libraries. In which, the key areas mentioned for automation are, library house-keeping operations, automation of reference services, classification, cataloguing, indexing, database creation, networks, reprography, technical communication, etc. For taking up all these activities, the library professionals should be thoroughly trained.

Varalaxmi, R.S.R.\textsuperscript{35} (1999) listed the new changes occurring in profession such as, new categories of users, changes in information, changes in management, influence of Information Technology, etc. The role of professionals on these lines was discussed. The staff should provide the information needed by user which requires specialized knowledge and professional skills. The importance of communication skills were highlighted. Since the automation and application of Information Technology are inevitable in libraries, the staff should develop an
attitude to learn the latest developments, taking place in library automation and information technology, which are necessary to improve the quality of information products and services.

Ojha and others\textsuperscript{36} (2000) studied about the application of Information Technology in Indian libraries during the last decade of 20\textsuperscript{th} century. They made an attempt to visualize Indian Librarianship in 21\textsuperscript{st} century in the light of ever-changing Information Technology. The use of computers in libraries, particularly for information management emphasized in which case the library professionals have to change from traditional techniques to modern techniques. According to them the impact of Information Technology in Library and Information Science is in the activities of networking, CD-ROM, Internet and multimedia.

Somasekhara Rao and Ayyababu\textsuperscript{37} (2000) made an attempt to study the attitudes of the professionals on information technology in Andhra University Library. In their survey, the Assistant Librarians, Library Assistants and the Technical Assistants were covered. The attitudes from the selected professionals were collected on the following areas:

- Awareness on library automation;
- Library automation Vs. Staff;
- Awareness of information technology methods;
- Computer training;
- Use of electronic media;
- Use of E-mail;
- Use of CD-ROM;
- In-service training.
Further, they reported that the awareness on library automation is satisfactory. Regarding Information Technology, the response from library assistants is negative and rest of the professionals have knowledge. But, a majority expressed their willingness to gear up with the latest developments by attending short-term training programmes on computers. Most of the staff had training and would like to have further training. The respondents expressed their interest to use electronic media in their respective libraries and also e-mail, CD-ROMs etc. Almost all professionals selected for the study expressed their interest in learning and understanding the latest information technologies that are useful to information processing and retrieval.

Carolyn and Emmett (2001) conducted a survey twice from three libraries of Florida Community College. The professionals expressed their willingness to library automation, concerned about ergonomic factors. Automation had no influence on library administrative hierarchy, job satisfaction and major time saving benefits to workload. Some of the respondents expressed that the training on automation is not adequate. More than 63 percent of respondents stated their interest to learn new knowledge and the rest reported that they had insufficient background to learn the latest knowledge. The respondents expressed their satisfaction on the quality of training.

Gulati and Srivastava (2001) discussed the changes taking place in libraries due to Information Technology. In the changed environment, particularly, the use of Internet, Web resources, etc., the responsibilities of library professionals were discussed. The information publication is undergoing several changes and the use
of information, the library professionals have to learn Information Technology skills. They suggested the training for library professionals to acquire skills in collection development, information consideration and re-packaging, data presentation, technical processing, information services, database management, etc. They concluded that, the Library and Information Science Professionals should know the skills that are necessary to create, collect, communicate and consolidate information on behalf of users.

Kasi Rao and others\textsuperscript{40} (2001) studied the application of IT among academic and special library and information centers in and around Chennai. It has been found that majority of the library and information centers have opted for IT applications. Interest for IT applications in libraries is not promising among the academic library professionals. Application of IT is more prominent in special libraries and information centers. They also expressed that there is a need for the provision of more funds for IT applications. Training programmes on IT are also suggested for library professionals.

Lakshman Moorty and Karisiddappa\textsuperscript{41} (2001) studied the information infrastructure facilities in Indian libraries. They have conducted a survey on 147 libraries, of which 78 are in government sector and 69 are in autonomous institutions. It is reported that 73 percent of the respondents using computers in their libraries. In the similar lines, they studied response rate on library automation software, use of media, use of online, electronic journals, etc. The response rate on digital libraries is not promising, as the respondents’ knowledge on digital libraries is low.
Pinfield\textsuperscript{42} (2001) discussed the role of subject librarians in academic libraries in the light of information technology. In U.K. academic libraries, the delivery of library services are carried out through traditional and electronic library services. The traditional role as well as the changing role of library professionals was discussed. In addition to the traditional jobs, professionals have to perform other jobs which came into being due to IT. The role of professionals in the selection of e-services was highlighted, which requires a special training for professionals. Further, the author emphasizes on training in information skills to subject librarians for performing their job successfully.

The importance of library websites and its advantages to library professionals to develop information landscape to users were discussed. This also demands the need for training of the professionals. Besides these, the author also recommended training on communication skills, IT skills, presentation and technical skills, financial management skills, analytical and evaluation skills.

Amarnath\textsuperscript{43} (2002) studied the role of librarian in digital era. A good number of challenges of digital libraries, such as funds crunch, non-availability of required infrastructure, lack of trained human resources, lack of self exposure, lack of motivation and disinterest of staff, etc. were mentioned. Besides these, the librarians facing other challenges like digitization process, data base creation and maintenance, information seeking patterns, etc. To meet the challenges, the following measures are suggested for library.

1. Continuous self updating.
2. Developing a strong professional team
3. Conducting continuous education and training programmes for staff and users.
4. Officer training skills on particular process.
5. Offer continuous training on new aspects.

Chatterjee\textsuperscript{44} (2002) mentioned the changing needs of users and the required competencies for professionals. The users prefer instant service through automatic libraries, ready information, information available in digital form, information available globally, online access to information and access to hypertext. Based on the needs of the users the following competencies were suggested:

1. Developing and managing convenient, accessible and cost effective information services that are in tune with the requirements of the organization.
2. Providing excellent instruction and support for library and information services to users.
3. Continually assessing the information needs and design information services to meet identified needs and improving information services.
4. Using appropriate IT to acquire, organize and disseminate information.
5. Evaluating the outcomes of information use and conducting research related to the solution of information management problems, etc.

To meet the challenges, he suggested a separate course suitable for building manpower in running traditional libraries and modern libraries.

Ghosh and Avasia\textsuperscript{45} (2002) made an attempt to explain the role of intranet extranet and internet for information management in libraries and the
responsibility of library professionals. The library professionals have to develop the skills to facilitate quality information retrieval in addition to traditional information retrieval skills. There is an urgency to interrelate users' needs with the available technology to process the information. Training in internet would help the staff to discharge their duties, particularly updating of information. They advocated for proactive management of the information sources. Continual professional development is stressed upon library professionals. They opined that the tools required to make use of information through networks are totally different and emphasized training to professionals to that effect.

Gupta and Arora\textsuperscript{46}, (2002) made an attempt to focus the role of librarians in digital libraries. The objectives and characteristics of digital libraries were highlighted. In components of digital library, high speed LAN and connectivity to internet, RDBMS that supports variety of digital formats, search engines to indeed and provide access to resources and electronic document management were mentioned. The professionals' attitude was not satisfactory towards information technology according to them. The copyright problem, political barriers, technical barriers etc. were discussed. Suggestions were given to library professionals to shift traditional librarianship to digital librarianship.

Harish Chandra\textsuperscript{47} (2002) stressed upon e-collection in libraries, their advantages and disadvantages and the role of librarian in e-collection, development. Various types of e-collection like E-books, E-Journals, etc. were listed. There is an urgent need to build e-collections to meet the growing information needs of the users. Therefore, a policy for development of e-collection is to be evolved. In this situation the traditional librarianship may have little significance and the
professionals need to be trained with the latest developments taking place in information handling from time to time.

Hussan Nabi and Others\textsuperscript{48} (2002) discussed CD-ROMs as a media for information packaging retrieval and dissemination. The use of CD-ROMs in libraries is highlighted. In advantages, high storage capacity, reliability, cost effectiveness, portability, ability to store graphic data and resource sharing were discussed. The problems of Indian Libraries particularly the financial crunch can be minimized by adopting CD-ROM Technology and networking according to them. So, professionals be imparted with the kind of training that is necessary to use CD-ROMs was stressed.

Majumdar, Kamalendu and Panigrahi, P.K.\textsuperscript{49} (2002) presented a birds eye-view on internet and its use in libraries. The importance of internet and its use was mentioned – e-mail, research, downloading files, discussion groups, interactive games, education and self employment, friendship and dating, electronic newspapers and magazines, job wanting, electronic commerce, etc. The anatomy of e-mail was stated along with skills required for professionals to use e-mail. The advantages of e-mail were discussed in detail to make use of this facility, the library professionals should have a systematic training.

Nandi, S. Gopal\textsuperscript{50} (2002) discussed the influence of Information Technology on LICs in the areas of library collection, library personnel, library equipment, library users, library building, etc. He made a comparison between existing pattern and changed pattern of the said areas. Further, stressed the importance of communication technology in discharging various library services. The areas of
priorities for library automation were discussed, such as creation of databases, network development, housekeeping activities etc. The competencies that is necessary to make use of information technology facilities were listed - personal characteristics, basic skills, general knowledge and specialized knowledge. In India, more than 80,000 Public Libraries, 230 University Libraries, 8,500 College Libraries, 2,000 Government Libraries are managed by about 3,00,000 professionals. A plan should be made to train these many professionals towards information technology.

Ravichandra Rao, I.K.\textsuperscript{51} (2002) identified difference of information management in traditional libraries and automated libraries. Librarians mostly deal with information available in documents. But information management is not totally Librarians’ job. Librarians can be called as information managers provided the information handling activities are taught to them. The author discussed differences between conventional libraries and E-libraries and emphasized the need for training to professionals. A number of changes that are appearing are listed. Technological changes, socio-political, educational and demographic changes, changes in the government policies, changes in user needs and requirements and changes in structure and dimensions of information industry. The issues associated with use of E-publications are listed as accessibility, awareness and coverage in securing periodicals, access Vs. ownership acceptability, accountability, pricing, bibliographical control, sociological and psychological issues, classification, etc. To meet the challenges and changes, the professionals should be trained from time to time with the developments occurring in information management.
Shanmugam\textsuperscript{52} (2002) made an attempt to explain Knowledge Management (K.M.) and the role of librarian. The knowledge computing process in an organization or institution should give thought to how the users of library be served, the knowledge sharing within the company or library and geographical and chronological barriers. In knowledge management different databases are developed to meet various activities. To create, develop and organize databases, the library professionals should be trained thoroughly. The author concluded, the library staff should depend on stake holders of knowledge, to understand intricacies of the subject and also keep the staff abreast with the recent developments of the subject.

Singh and Chandra\textsuperscript{53} (2002) stated the roles of the librarian in the electronic era. In the beginning they mentioned the traditional role of librarian such as collection development, acquisition, cataloguing, classification, circulation, reference work, preservation, conservation and achieving. In the electronic era the following roles are listed:

1. Selection and acquisition.
2. Payment for electronic journals.
3. Catalogues and data bases.
4. Reference work and access
5. Electronic resources expert.
7. Access to electronic journals.
8. Preservation.
9. Loss and damage.
They concluded that the librarians are the appropriate professionals to lead the team of people in finding the answers to challenges occurring in digital environment of electronic information and internet.

Uma Rao\textsuperscript{54} (2002) expressed that the concept of librarianship is changed from book keeper to information manager or information service provider. The librarians of automated libraries are termed as personnel managers, teacher, a public relation officer, an information service provider, etc. The role of the librarian in various positions like P.R.Os, member or Library Committees, etc. was discussed. The author opined that the library professionals are multifaceted and Librarian is expected to pay the services to the satisfaction of library users. In the context of IT environment, the library professionals have to acquire the necessary skills to acquire, store, process and retrieval of information.

Anjaiah and Sudarshana Rao\textsuperscript{55} (2003) expressed that every professional requires training in Information Technology. Librarians and information professionals are increasingly involved in management of networks, E-mail, Internet, etc. To ensure easy access to information, the professionals should be trained thoroughly with the areas of Information Technology. They suggested the following areas for training:

1. Awareness on the sources of information availability.
2. Familiarity with methodologies for identification, analysis, organization, evaluation, presentation and dissemination of information.
3. Knowledge on planning, designing and developing local and regional information systems.
4. Skills required to collect, preserve, organize and dissemination of information.

5. Knowledge on Information Technology developments.

6. Knowledge on Automation and Networking skills.

7. Continuous professional training.

Mahapatra\textsuperscript{56} (2003) made an attempt to list the areas in which Library and Information Science Professionals should be trained:

1. To know the availability of information through information sources.

2. To make information available to the potential users.

3. Library professionals should develop the knowledge and skills for tapping information available in variety of sources and forms.


5. Skills that are required to optimum utilization of information sources.

6. Knowledge on resource sharing and consortia.


The author concluded that these competencies are necessary for Library and Information Science Professionals, otherwise the related professionals may supercede us.

Padhi, P., and Varadarajan, N.\textsuperscript{57} (2003) suggested methods to improve skills of Library staff:

1. Continuing Education:- it is a boom for library staff to improve their qualifications and skills throughout their service. The staff should be
deputed to undergo training on latest Information Technology developments to implement the same in their libraries successfully.

2. In-house Training:- To train all or majority of staff this method would yield good results. Most of the libraries are going for automation, instead of sending the staff for training, it would be better to provide the same training in the library to all staff in the areas like fundamentals of Computers, Operating Systems, File Management, Software Packages, etc.

3. Outside Training:- To learn in depth knowledge or latest knowledge, the library staff should be deputed to those institutes where that kind of facility is available. After getting training, the same may be imparted to other professional staff in that library.

Rama Reddy (2003) emphasized manpower is an essential component in the growth and development of any organization. Manpower development includes the areas of formal training, skill acquisition, constant up gradation of skills, etc. The following skills are required to library professionals.

1. Upgrading professional skills with practical work.
2. Keeping in touch with developments and acquiring the new skills required for the job.
3. Understand the database standards, communication standards for data entry.
4. E-Publishing tools.
5. Knowledge on CD-ROM resources use.
6. Creation and maintenance of Networking tools.
7. Database creation and maintenance.
8. Tuning to the new environment with I.T. tools
9. Scanning, conversion, indexing and linkage issues to work in digital environment.

Viswamohan and Laxmana Rao\textsuperscript{59} (2003) opined that library and information centre is a part of communication system and the library professionals are compared as communicators. Therefore, the library and information centre professionals should be well versed with the current communication technology or the Information Technology. They suggested the following skills to be imparted in library schools to train manpower:

1. Communication skills
2. Improving scholarship
3. Technical know how (Hand on practical experience in classification, cataloguing with latest formats, such as MARC-21, etc., indexing, abstracting, literature search, data mining, etc.).
4. Knowledge and practical experience in use of Information Technology (Software and Hardware selection, Bar code Technology, Networking, Digitization, use of Internet, and practical knowledge of Software Package, etc.).

It is evident from the review of literature that a good number of Indian scholars made effort to understand the professional attitudes and Information Technology. The application of I.T. and professional attitudes is not similar in Indian and Western Libraries. The application of I.T. is quite significant in libraries of Western part of the World. In Indian libraries, the situation is in embryonic stage.
Therefore, the experience of the West would help to develop Indian Library Professionals towards I.T. The Government of Andhra Pradesh is very keen in adopting I.T. for information transfer and dissemination and giving importance to technical institutions and their Libraries on priority basis. Therefore, this topic is selected for the present research study.

Mark Cain (2003) opined that librarians and technologists are becoming increasingly interdependent, so to achieve their goals, they must cooperate. Perhaps that collaboration will take the form of a merger into a single organizational division, but it doesn’t have to. The two groups must talk together frequently, meet, share information and work together on joint tasks and other projects.

Ramzan, M (2004) in his paper, presented librarians’ attitudes toward information technology, their level of knowledge in IT, and their relationship with each other. Secondary data was collected through review of the relevant literature. Primary data was collected through a questionnaire survey of 244 librarians of libraries in Pakistan. The study revealed that awareness of the potential of IT, recency of attaining professional qualifications, and knowledge in IT had a significant relationship with librarians’ attitudes. The study also revealed that librarians’ level of knowledge in technology is a good predictor of their attitude toward application of information technology in libraries. Based on the findings, the paper puts forward recommendations to improve the librarians’ attitudes toward IT applications in Pakistan and other developing countries

Sevcik (2007) states that IT Service Management is an important step in helping your IT organization better support your business. But Application
Performance Management is the next step along that journey. IT Infrastructure Library as a common framework for both is very valuable. Once your organization masters the delivery of both technology and flows, then you are really delivering optimal business services.

Paul, A.A., Rosnald, O.O. and Adeyinka, T. (2007) report that training and knowledge are the sine qua non of a positive attitude toward ICT. In this era, when new technologies are introduced almost daily, it is essential for librarians to keep up with ICT developments. The fear of some in the developing world toward ICT is widening the digital divide. Training is the first step, which will reduce fear when implementation of ICT begins.

Rabina, D.L. & Walczyk, D.J. (2007) examined the innovativeness of librarians with regard to their willingness to adopt ICTs. Using an online questionnaire and results from more than 1,000 respondents, distinct and consistent patterns were revealed. The findings showed that librarians' attitude towards new innovations is unevenly distributed, with most either accepting of new innovations or being late adopters. These findings were consistent regardless of demographic variables. Age, role, tenure, and library type were shown to have little effect on librarians' attitude toward the adoption of ICT innovations. The findings suggest that some of the conventional wisdoms regarding information professionals and their willingness to adopt new ICT innovations may be incorrect. Contrary to common beliefs, librarians in academic or special libraries are no more innovative than public or school librarians. Technical service librarians are not more innovative than public service librarians. Older librarians seem only a little less likely to accept innovations, and administrators appear to be no more innovative than the employees they supervise.
Theresa, W and Lalithamba, C. (2008) reported that application of ICT in libraries has become inevitable in an era of information explosion and widespread use of digital information resources. Effective application of ICT in libraries helps in performing their operations and services most efficiently. The modernization of libraries and information centers enabled information transfer and access, meeting objectives and thereby establishes a network of libraries and information centers. This initiative saw a major shift in resource development, resource sharing and their utilization at various levels. They subscribe to e-journals, CD-ROM databases, online databases, web-based resources, and a variety of other electronic resources. They participate in library consortia and build digital libraries.

Akande, Samson Oyeniyi (2009) says that libraries are established to select, acquire, organize, preserve and disseminate information. The findings of the study that knowledge and perception about preservation of information resources are correlates of attitudes towards preservation of information resources are quite revealing. This implies that the library management in the Nigerian federal universities needs to give more attention to Human Capacity Building through provision of opportunities for advancement in preservation education and skill acquisition by training in preservation practices. These gestures have potentials for knowledge acquisition and cognitive capacity development which can enhance perceptive ability of library personnel about preservation of information resources. Furthermore, regular staff education provided through orientation programmes, seminars and workshops on preservation issues can improve the knowledge of library personnel and their perception about preservation of information resources in Nigerian federal university libraries.

John and Marian (2009) discussed various preservation problems and challenges faced by different types of digital materials to ensure permanent
accessibility of resources by present and future generations. It argues that digital preservation poses challenges fundamentally different, from the traditional materials mainly due to varied and complex nature of digital resources. They concluded that there is an urgent need to draw up national digital preservation frameworks to protect the current digital information resources for future access and use.

Maria Collins and Jill E. Grogg68 (2011) stated that given the challenges for Electronic Resource Management Systems, it is tempting to think we face a raging river with no bridge. But perhaps the ERM systems currently available are just that: a bridge between the traditional ILS and what lies ahead. No one single system currently available—commercial, open source, or homegrown—can possibly meet all needs. Building a better and more responsive ERMS is an iterative process, and no emerging system is a silver bullet. Nonetheless, it is possible to work together toward a more integrated e-resource solution.

Owajame, J.O. and Ogochukwu, T.E.,69 (2011) revealed from their study that vandalism of library materials in the form of theft, mutilation and hiding of books and journals, is largely regarded as a form of academic survival, this makes student to put up “I Don’t care” attitude to library materials. The major causes of vandalism of library materials include limited library collections; restrictions in the use of some materials; number and duration of loans; insufficient number of copies of recommended textbooks; unaffordable cost of personal textbooks; high cost of photocopying as well as peer-influence. Amongst others, researchers recommend the following: training and retraining programme for users, extension of loan period; adequate funding; robust security measures and punishment of offenders.

Brodsky, J and Wells, M. K.,70 (2011) found in their study overwhelmingly positive attitudes of public library professionals toward patrons with physical
challenges. Indications of more positive attitudes by those who have had formal training than those who have had none, suggest that targeted specialized training in library school courses, continuing education classes, and municipal training workshops can positively affect attitudes toward patrons with physical challenges.

Cynthia Orr 71(2011) feels that some libraries have been more successful than others in implementing, promoting and managing their e-book collections. As he sees it, libraries will become the premium destination for access to copyrighted digital media. With many cash-strapped libraries already doubling their digital circulation since 2010, this may be a somewhat frightening scenario for those who wonder how they will afford to meet the new demand. But just as e-book popularity didn’t take off in libraries until after the Kindle success led to better media coverage of the format, perhaps this new demand from thousands of outspoken Kindle users will challenge reluctant publishers to agree finally to do business with libraries.
REFERENCES


