1.1 Introduction

The advent of Information Technology, advancement of science and literature and the exponential growth of knowledge have made the knowledge storing device undergo a sea change in the second half of the 20th century making the world into a global village. The knowledge production and dissemination in the world have found a sea change in this information era.

The word ‘Information’ is derived from the Latin word ‘informare’, which means ‘give form to’. The information society is the building block for knowledge societies. The concept of ‘information society’ is linked to the idea of ‘technological innovation’. The concept of ‘knowledge societies’ includes, a dimension of social, cultural, economical, political and institutional transformation, a more pluralistic and developmental perspective (Burch, 2006). Since knowledge is omnipotent, it becomes the creator of social, cultural, technical, religious, spiritual, scientific, technological and materialistic world. “To meet the newer requirements of advanced human society, new knowledge is the need of everybody and in order to cope up with this situation, the global thoughts are channelized for the generation of new knowledge” (Rowley & Turner, 1976).

Information being the source of knowledge and wisdom, it becomes a message communicated by a communicator to a receiver. As such, the generation of information and communication keeps the social fabric active and vibrant and it is being an essential resource for socioeconomic and political development of any country. Information being the power makes and unmake empires. As the individual subjective knowledge of each person is transformed into objective knowledge by each individual’s public expression via speech, writing etc., or on being shared, the objective knowledge is publicly observable by all and comes very near to the concept of information (Artandi, 1973). The information entering into the world is composed of facts, data, figures, tit-bit advice, wisdom and even lore. By itself, the information is not knowledge. Information and data must be gathered, read, assembled, observed, questioned, conceptualized, judged, manipulated, integrated, analyzed, synthesized and evaluated before it becomes knowledge. The information must filter through
experience and apply to our lives in order to become our knowledge. It must be used and reflected to become meaningful: otherwise, it remains just facts and figures (Karisiddappa, 2005). According to (Kumar, 1998) the role of information has attained new proportions with the acceleration of research, mounting social and population pressure, changing technological environment and increasing needs of planners, decision makers, business houses, executives, lawyers, doctors and even the common person. Since the role and importance of information is growing in ever-increasing volume and rate in every field of human activity, it is reprocessed and repacked for different types of users to suit their needs.

1.1.1 Skills development

As India moves progressively towards becoming a ‘Knowledge economy’, it becomes increasingly important to focus on advancement of skills and these skills have to be relevant to the emerging economic environment. The National Skill Development headed by Prime Minister of India with the coordination of seventeen ministries will empower all individuals through improved skills, knowledge, nationally and internationally recognized qualifications, to gain access to decent employment and ensure India’s competitiveness in the global market. The major goal of the national skills mission is to provide within a five-to eight-year time frame, a pool of trained and skilled workforce, sufficient to meet the domestic requirements of a rapidly growing economy, with surpluses to cater to the skill deficits in other ageing economics of the world, thereby effectively leveraging India’s competitive advantage and harnessing India’s demographic dividend.

India has the young population in the world. The demographic profile of India, in comparison with that of the other nations, would work to its advantage, subject to youth who can acquire the desired skills and seize the global employment opportunities in the future. The quality of the training presently imparted in the institutions is also a matter of concern, as the infrastructural facilities, tool-kits, faculty, curriculum are reportedly substandard. The skills development mission expected to facilitate training of the people to make the best use of these
opportunities. With the Rs.31, 000 crores proposed to spend over 5 years, the mission will look at 20 areas of growth for skill development in services. Skills development needs to be a top priority item on the list of agenda of academic institutions in higher and technical institutions (Shetty, 2012).

1.1.2 Information and communication

Technology today is taking the form of ‘information superhighway’, the term coined by Ex Vice President of USA Albert Gore when he was giving a speech on January 11, 1994. He described the future of computers, accessing and communicating over a world-wide network. The combinations of different technological disciplines such as computer technology, information technology, telecommunication technology, satellite technology, digital technology and electronics have contributed to the emergence of information and communication technology. The information and communication technology applications transformed the traditional libraries into electronic libraries or digital/virtual libraries. (Martino, 2000) comments that, “rather than visiting a library, any individual might be able to search to library files electronically and received printout of specific information or facsimile copy of a desired document” as we are heading towards a paperless society as stated in a recent article by Allen Kent. Therefore, the 21st Century can be the age of creativity. One of the most striking characteristics of a developing society is the sense of information consciousness that permeates throughout the populace of the society. Realizing the need to access information available in any corner of the world and the challenges posed by the “information Age” in the modern technology, the new methods of information storage and retrieval are discovered. In this age of science and electronics, computers contribute to reduce the bulk of the printed material. Thus, computers play a significant role in making the libraries and the society paperless in future.

1.1.3 Libraries in the changing scenario

Technology has made modern society possible. It has increased the human life span and allowed a healthier life. It has added to leisure time and reduced the
long hours of work. Technology can allow the world to feed itself. It has reduced the effects of natural calamities such as famines and floods. The world is now a smaller place (global village), where people can readily communicate with each other and travel rapidly anywhere. Technology has raised the standard of living, at least in the developed nations to a point unimaginable only a century ago. It has also created more jobs allowing more employment for the human beings.

The major information and communication technologies (ICT) transformed and developed the library and information services as automation and mechanization of every function of the libraries. The compact storage of information, easy accessibility and faster communication, subject databases particularly from academic institutions, increasing number of institutions, especially academic and research institutes are making databases in their specialized subject made available. Automated library catalogue: increasing numbers of libraries are making their catalogue electronically available over the internet, which may extend the use of library resources. The list serves the discussion groups on a wide variety of topics. The participants have the opportunity to exchange and share current information. The document delivery services may provide electronically, using internet technology. The electronic mails allow the users to send messages or files to each other. The commercial information databases are available on the internet include DIALOG, Lexis-Nexis, Dow Jones News/Retrieval and many others. Telnet or remote login allows users to log into remote sites. The File Transfer Protocol (FTP) and Hyper Text Transfer Protocol (HTTP) are allowing users to access and retrieve files at remote sites. Gopher-a text only is a non-graphic method to receive internet documents, which has largely interpenetrated into the World Wide Web.

The World Wide Web allows users to jump from one resource to another in an easier way, without going through gopher style menus. The video-conferencing and teleconferencing involves linking more than two users, so that the participants from different places all over the world can see each other and view presentations. The consortia like UGC-Infonet, INDEST AICTE, provide information through access to a large number of journals to academic libraries all over India. Such services enabled
to economize the services from a single platform, to avoid the duplication of subscription, to strengthen the services of networking and encouraging research and development by providing information in easy accessible ways open source Initiatives and institutional repositories.

Due to such continuous development in scientific and technological applications in the libraries, there is also a demand that the library and information professionals, who are managing libraries, must be competitive and be experts in applying and using these technological applications. For this purpose, there is a need on the part of library professionals to possess skills and competencies in the field of information and communication technology applications in the libraries. It is also noted that engineering and technical colleges are playing an important role in imparting higher education and enabling research and development in different technological subject disciplines. Hence, it is essential, that, the libraries of these colleges must have to adapt to the new ICT applications, to provide effective services to the users.

1.1.4 The changing role of library professionals in the digital age

The rapid development in information technology paved the way for librarians to transform into information specialists. The obligation of a librarian towards his profession is going to compel him to change his role as an information gatherer. “The present library & information professionals are expected to provide not only what has restored in his library but also to provide the information available anywhere in the world. This brings him closer to the needs of the precise requirements of the users, besides having complete access to the world resources. The efficient matching of the two is going to define how efficient LIP can be as a professional librarian. As a result he will be fulfilling an obligation to himself and will emerge as a satisfied professional” (Koul, 1988). The librarians and information specialists have always been a part of learning culture as information managers, and subject experts, LIPs act as gatekeepers with general skills. “Thus, they have stemmed out of the traditional gateways of information to the traditional band of gatekeepers of information” (Karisiddappa, 2005).
The readily available information on the Internet and its widespread use, really presents librarians with an opportunity and not a threat. The technology savvy users realize that they need help, which librarians can provide. Librarians now face difficulties and complex challenges due to new trends in information access. In the present technological/Internet era, the professionals have to change themselves as the information profession is being changed. Now the information specialists have to work as e-information resources, in which various professional groups are expected to map strategies that lead to produce, manage, maintain and service the information. The Information professional has to work as: (Sharma, 2005).

- **Librarian**: In addition to being a library manager, he should also act as a collection development agent, a technical processor to take care of the information quality.

- **Information Manager**: To meet the information need of the user, he should know how to manage and deliver appropriate information services.

- **Information Adviser/Instructor**: He should ensure that the user/staff know how to access relevant sources of information (literacy).

- **System & Networking Manager**: For the delivery of information to his users in an appropriate manner, he should develop and design appropriate systems.

### 1.1.5 Skills, knowledge and competencies required for LIS professionals

The term skills, knowledge, competencies and such other terms are used synonymously in this study but they differ slightly in meaning. Specifically, ‘skills’ refers to do something well, arising from talent, training or practice. ‘knowledge’ refers to acquaintance with facts, truths, profession or a particular subject or branch of learning. ‘competence’ refers to the quality or state of having sufficient skills, knowledge and requirements to do a certain job.

The basic goal of the library and information profession has always been to provide access to information, to those who need it. The activities realizing this goal have evolved and transformed over the years. This includes - available technology,
and need of an evolving information society. The information activities have guided by the developments in the field of storages, presentation and archiving of knowledge, collection, and development, organization of knowledge, information explosion and computers in information retrieval. The librarian and the information professionals are involved in information gathering, storage, retrieval and dissemination on one hand and on the other, the computer specialists supported the library and informational professionals in their endeavours. For successful implementation of library, it is essential that LIS professionals are well trained and possess requisite knowledge and skills in this respect.

The Knowledge & Skills that Librarians need to know/ understand and process

- Knowledge resources (books, journals, i.e. resources, Internet)
- Technological facility and resources: computer, online catalogues, websites, LANs file servers
- Financial resources (Budget) Human resources (Skills for manpower training)

Professional Skills: It is an art of performing professional expertise and some of the following are the professional’s skills:

- Librarianship Skills
- ICT Skills
- Managerial Skills
- Leadership Skills
- Information Skills
- Communication Skills

Management skills: Management is a challenging job. It requires certain skills to accomplish such challenge. Thus, the essential skills, which every manager needs for doing a better management, are managerial skills and some of the following are the management skills for library professionals.
Planning and Forecasting
Independent Decision-Making
Leadership
Self-confidence and supervision
Time Management
Authority and Responsibility
Direction (Directing)
Leadership Competencies of the superiors
Interpersonal and human relations
Conflict Resolution
Motivation
Problem solving
Co-ordination
Developing Team spirit
Motivational Competencies of Superiors
Job Recognition
Performance Appraisal

The technical knowledge needed for the LIS professionals in the dynamic and ever changing electronic environment:

- Operating Systems: Windows, UNIX, LINUX, Ubuntu
- Word Processing, Graphics, Spreadsheet & Presentations
- Database Management Systems including the skills in Bibliographic, Database Management Systems
- General purpose programming and Networking
- Web page Development and Content Management
- Information retrieval software for online, CD-ROM and Internet
- Library software packages and acquaintances with Digital Library Tools

The general competencies required for LIS Professionals:

- Acceptance of change
Knowledge of user interaction with knowledge resources

Providing of quality service

Being adoptive, flexible and resistant

Being resourceful

Possessing excellent communication skills, and be willing to constantly update personal knowledge base, by keeping in touch with the latest developments

Creating awareness among the users and make them accept the changes

Being an information management strategist, etc

The professional librarians and information managers require the knowledge and expertise to design, plan, develop, manage and evaluate the delivery of library and information services to meet the information needs of their clients and assist them to become information literates. Through professional education, librarians and information managers will have the ability to analyze, evaluate, and organize and synthesize information and to develop programs that will encourage their clients to acquire the skills necessary to effective seek, locate and use the information they need. The library and information technicians require sound practical knowledge and skills in order to effectively support the delivery of these library and information services. The experienced technicians provide additional support by supervising staff and assisting in planning, implementing and evaluating services and systems. (ALIA, 2005)

A workforce that is successful in characterizing the Library and Information Sector:

- Promoting and defending the core values of the profession;
- Understanding and responding to people's information and learning needs;
- Managing the storage, organisation, access, retrieval, dissemination, preservation and use of information;
- Developing, delivering and evaluating the information facilities, services, sources and products;
Envisioning and planning future directions for the library and information sector;
Advancing library and information science and its application to information services

The library plays an important role in the educational institutions, by providing necessary reading materials and information for higher education and research. A college library occupies a premier position, by providing ample scope and encouragement, so that the individual’s needs and requirements are fulfilled. The process of learning takes place within the four walls of the classroom and laboratory should be augmented by a variety of resources in the library. One of the key qualities of an ideal college library lies in its capacity to enable the students; to use their leisure time meaningfully with an effective purpose. This should enhance the chance of identifying the inherent talents in them to inculcate and absorbing hobbies, thereby it can lay a strong foundation for a good, responsive and responsible life. Furthermore, the library by virtue of its position in the hierarchy of higher education takes an individual to the world of recorded ideas and apprises him/her of the lively issues of life and challenges.

As discussed already, due to the invention of the ICT applications, the libraries of the engineering colleges are also transformed by providing electronic information services. As such, it was observed that the majority of the engineering college libraries in Karnataka state are partially computerized and provide both print as well electronic and ICT based information services. To work in continuously changing and transforming technological environment in these libraries, there is a need on the part of the library professionals to acquire and develop necessary skills and competencies in different techniques such as library automation, internet, web, electronic mail, database search service, OPAC, video conferencing, electronic information/document delivery, consortia related services, etc. The nature and application of the technology is continuously changing and developing and as a result, it is required on the part of the engineering college libraries, to update and upgrade the technological applications.
1.2 Need for the Study

Due to the advancement in the information and communication technology and its applications, there is a vast development and transformation in the structure and functions of the libraries. In this respect, there is an ‘organizational change’ as the printed documents are converted into digital information sources and print based services such as circulation services in the libraries transformed as electronic information delivery service. Hence, along with the change in structure, functions and infrastructure in the libraries, the library and information professionals must change. In this context, these professionals must develop the ICT skills from time to time, as these skills are changing continuously. For this purpose, there is a need to know about the ICT skills possessed by the library and information professionals working in all the engineering college libraries in general and the engineering college libraries of Karnataka state in particular. Therefore, the present study is aimed to be a useful and important as a research study in the evaluation of the ICT skills of library and information professionals working in the engineering college libraries of Karnataka state.

1.3 Objectives of the Study

The main aim of the present study is to evaluate the ICT skills of library and information professionals working in the engineering college libraries in Karnataka. The Objectives of the present study are as follows: to

1) study the staff structure of the professionals of engineering college libraries in Karnataka state;
2) know about the different services rendered by the engineering college libraries in Karnataka state;
3) study the existing collection development of engineering college libraries in Karnataka state;
4) study the adequacy of ICT infrastructure facilities available in the engineering college libraries;
5) evaluate the Management, Librarianship and ICT competencies and skills of library professionals;
6) study the need for training programmes useful for the library professionals;
7) Identify the constraints in acquiring information and communication technology (ICT) skills by library professionals working in the engineering college libraries.

1.4 Hypothesis

Keeping in view the need for the study and the objectives, the following hypotheses were formulated:
1) Majority of the engineering college libraries in Karnataka are facing the problem of inadequate number of qualified professional staff;
2) There is a lack of ICT infrastructure facilities in most of the engineering college libraries;
3) The services rendered by different engineering college libraries are varied from college to college;
4) Majority of the engineering college library professionals have good Managerial, Librarianship and Information skills competencies;
5) There is a lack of ICT skill competencies among the professionals working in the engineering college libraries;
6) The participation of professionals in various training and development programmes very low;
7) Most of the engineering college authorities are not coming forward to encourage the library professionals to participate training programmes.

1.5 Statement of the Problem

In view of the subject discussed above, the present study is planned to assess the information and communication technology applications in the engineering college libraries in Karnataka and evaluation and assessment of the knowledge and skills of the library professionals working in these colleges. Hence, the present research problem stated as “Evaluation of ICT Skills of Library and Information Professionals working in the Engineering College Libraries in Karnataka State: A Study”.

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1.6 Limitations of the Study

As discussed earlier, there are 192 engineering colleges located in different parts of Karnataka. The scope of this study is limited to the engineering colleges affiliated to Visvesvaraya Technological University (VTU) Belgaum (India) as on 31st December 2012. The All India Council for Technical Education (AICTE), New Delhi is an apex body at the center, which controls all these engineering colleges.

The researcher received responses from 128 (66.66%) engineering college library professionals from all over Karnataka State, i.e. 128 Librarians, 5 Deputy Librarians and 240 Assistant Librarians.

1.7 Research Methodology

The study adopts a combined methodology of theory and fieldwork in order to evaluate the ICT skills of library professionals working in the engineering college libraries. The study began with the exhaustive published and unpublished literature search on the selected research problem. By referring all leading regional, national and international journals and books published in the fields related to ICT applications, ICT skills, engineering college libraries, information literacy, training need analysis for LIS professionals, are searched several subject databases like Library and Information Science Abstracts (LISA), ERIC and IEEE, EMERALD, ASTM DIGITAL LIBRARY, MCGRAWHILL E-JOURNALS/E-BOOKS, SPRINGER LINK, EBSCO, ELSEVIER, J-GATE DATABASES are also searched and relevant information has been retrieved for the review of literature along with other web-based resources.

The collection of Primary data is an important step in every research study. The research scholar collected the primary data through Questionnaires. To evaluate the ICT skills, a pilot study was found necessary. The first draft of the questionnaire are distributed to all the colleagues where the researcher is working and to ten more engineering colleges library professional’s region wise, in Karnataka State. The
responses received by them were briefly analyzed. Based on the feedback received, the questionnaire was then adequately and suitably modified.

The Questionnaires cover different questions and scales like dichotomous, multiple choice, descriptive and rating. Altogether three questionnaires were designed as under:

The First Questionnaire was designed to evaluate the ICT skills and brief profile of the institution/ engineering college and its library was covered under the study. This questionnaire consists of 5 parts;

Part-I: General Information-It includes a brief description about management, library resources, library services and professional details about the Librarians.

Part-II: Management Competencies: evaluation scales used

Part-III: Librarianship and Information Standards skills

Part-IV: Information and Communication Technology Skills;

Part-V: Means, methods, constraints of acquiring ICT skills finally comments and Suggestions. This addressed to Librarian

The Second questionnaire was designed to assess the ICT infrastructure available in the engineering college libraries. It addresses Librarians and covers the availability of hardware components, type of software, telecommunication and networking, internet, E-Learning technologies and data base facilities.

The Third questionnaire was designed to evaluate the ICT skills of Library professionals i.e. Deputy Librarians and Assistant Librarians. It covers the professional information, Management competencies, Librarianship and Information Standards and skills, Information and Communication Technology skills and Means and Methods and constraints of acquiring ICT skills with comments and suggestions. This addressed to Individual professionals.

The researcher collected the primary data personally visiting the various engineering college libraries. Apart from getting information through questionnaires, the researcher used observation and interaction to gain required primary data
supplementing the questionnaire. Repeated visits were made to the selected libraries to make on the spot observation. In addition, series of discussions were held with the professionals, experts and fellow researchers to get the clear picture of the concept i.e. Academic library as a multimedia center and the related aspects. Therefore, this research work has used multi methods to collect, analyze and consolidate the data.

The primary data collected through the questionnaire are coded by using excel sheet. All the coded data are converted into SPSS (statistical package for social science and QI macros) to get the quantitative analysis. The tables are analyzed with the percentages, to make analytical study and help for comparison of different kinds of the data. The statistical techniques such as, one-way ANOVA, mean, standard deviation, correlation and chi-square, etc were used wherever necessary, to interpret the collected primary data. Further, based on collected data certain generalizations were stated as findings. Based on the present study, certain suggestions and recommendations were made and the study was concluded with suitable remarks. For reference to other publications APA (american psychologists association) style format was used.

1.8 Chapterization

The present research is designed into Two Parts: A and B.

Part-A:

Chapter-1: In the First Chapter, INTRODUCTION, an attempt has made to introduce the area of research by highlighting the need for the study, objectives, hypotheses, statement of the research problem, limitations, research methodology and chapterization.

Chapter-2: The Second Chapter covers the REVIEW OF LITERATURE. Before conducting the research, there is a need to know about the different studies already made relevant for the present study. These studies were already made and published in the scholarly research journals, conference proceedings, and books, seminars Theses etc., were reviewed from 1993 to 2013 in this chapter to find the research gap.
Chapter-3: The third chapter discusses the GROWTH AND DEVELOPMENT OF TECHNICAL AND ENGINEERING EDUCATION IN INDIA WITH SPECIAL REFERENCE TO KARNATAKA STATE, technical and engineering education in India and Karnataka are discussed in this chapter.

Chapter-4: The Fourth chapter discusses THE ROLE OF LIBRARIES IN TECHNICAL EDUCATION. Information and communication technology is playing an important role in the transformation and development of the libraries in general and engineering college libraries in particular. Hence, there is a need to know about the latest development of ICT applications to the libraries, ICT and modernization of libraries, and the ICT skills of the library professionals are discussed in this chapter.

Chapter-5: The Fifth Chapter discusses the ENGINEERING COLLEGE LIBRARIES IN KARNATAKA STATE: A PROFILE. The study conducted on the library professionals working in the 128 Engineering College Libraries, located in Karnataka state. There is a need to know about the organizational environment, management, collection, users, ICT applications, etc of these libraries and the statistics of the engineering college presented and analyzed.

Chapter-6: The most important part of every research study is analysis, interpretation and discussion of primary data. The Sixth chapter, DATA ANALYSIS AND INTERPRETATION covers the primary data collected on management skills, professional skills, ICT skills, training needs, etc of the library professionals covered under the study. Here, the tables are presented to analyze the primary data and statistical techniques used to discuss the primary data.

Chapter-7: In the Seventh chapter under the title SUMMARY, FINDINGS AND CONCLUSION. Based on the collected primary data and opinion based on library professionals the findings are drawn. Based on the findings, suggestions are made. The research study summarized and finally the study is concluded in this chapter.
Part-B:

Apart from the above stated seven chapters, four APPENDICES are also given to present Bibliography, which has listed the publications that are referred for the present research study, list of Abbreviations used in the study, list of engineering colleges of Karnataka state as on 31st December 2012. (http://kea.kar.nic.in/) and questionnaires that are used to collect the primary data.

1.9 Conclusion

This study has attempted to evaluate the ICT and Managerial skills of library professionals working in the engineering college libraries in Karnataka state. The world of information is undergoing rapid change. An information age at a great turning point in the history of civilization. The day has arrived when it is most important to learn to access, analyze apply and evaluate such information. As traditional custodians of information, librarians need to be aware of the implications of these changes and develop technological and managerial skills, which will enable them to make effective use of information and to meet their organizations changing information need.

The role of librarian has changed in this Internet era. It is, therefore pertinent on the part of the librarian to acquire new skills required for developing and managing the libraries. The library and information professionals are required to acquire such knowledge and skills as the library is one of the highly IT influenced service profession. The empowerment of library and information professionals with IT skills is aimed at providing services that are expected of from the clientele in the new environment.

References


