CHAPTER-I

INTRODUCTION

1.1 Introduction

Information is an organizational asset far more than the actual hardware that houses it. We are in the information age and our society is moving through a ‘cyber culture’. Digital Information and new forms of information technology (IT) have become a potent force in transforming social, economic and political environment globally. 21st Century has emerged as a period of transition and change. Development of IT is beyond one’s imagination. The impact of IT has paved way to paperless society. This excitement is seen not only in the business world and the general society, but also in the field of academics where computer scientists, cognitive scientists and social scientists are thinking about information and the social impacts of IT in a new way.

Development in information and communication technology (ICT) and E-publishing have made greater impact on print medium. In 1990’s CD-ROM technology emerged as a tool-storing vast amount of data in a small optical disc and has inroads into library and information centers. The information explosion has opened up electronic information to the masses. Latest developments of IT contribute to the significant improvement in the library services.

ICT application has come to usher innovative library models like digital libraries, virtual libraries and digital repositories aimed to knowledge sharing online. The impact of ICT has been evident in railway, air reservations, banking and insurance sectors, postal services, biotechnology, health care, telemedicine, media and communications, teaching, learning, library and information services, printing technology, e-resources, digitization of documents, digital library, library networking, e-commerce and trade, etc. It has made our life comfortable and easy. These changes have affected our libraries also.

Technology is the major driving force for change. It is the facilitator or overcome the delaying factors. ICTs and its tools have always been helpful in extending information services. They have changed the methods of teaching, learning,
research and extension activities in a higher education system. It is the technology that instantly connects to the resources around the world. Information Communication Technologies are a platform to deliver education around the world. These are increasingly being used to fulfill the promises of universal education. ICT is an important part of both formal and informal education for creating opportunities for lifelong learning. Information is an important resource and ICT and Web technology tools are used to create, collect, consolidate and disseminate information. In a developing country like India, a majority of libraries or information centres are lagging behind in making the optimum utilization of ICTs and Web technology tools. At the same time, ICTs have become the integral part of libraries today, leading to effective and efficient time and cost-saving information services. Integration of ICTs and Web technologies has become the basic necessity of libraries to enable information services in a broader concept. The last quarter of the 20th century witnessed remarkable changes and developments in the field of communication science and technologies. ICT facilitates access to electronic information which has become invaluable and complementing traditional intellectual resources.

The role of LIS professionals has changed rapidly in recent years in response to new forms of information and new methods of teaching and learning. Thus, ICT based modern engineering college library management is a challenging task in the new millennium. A new virtual environment has been created on the basis of effective application of ICTs in modern educational institutions and libraries in Karnataka State. The present study evaluates the available IT infrastructure facilities and the Information Communication Technology skills among the Library professionals of engineering colleges in Karnataka State.

1.2 Library and ICTs

As India is moving towards knowledge-based economy. State and central universities, research and development organizations, libraries and other business and management sectors have implemented ICT based applications. Libraries are key components of quality education and academic institutions having responsibilities. Its very important that academic libraries in particular need to be adequately equipped with not only books but with modern audio-visual products of educational technology too. ICTs have changed the ways of library and functions of librarians. Integrated
ICTs and web technologies can transform the profile of libraries. They are platforms for delivering both formal and informal educations. ICT awareness for the library sector will be an important component of a learning society. Use of ICTs in college libraries, is very important. It determines the quality of academic activities. With proper IT infrastructure, advanced ICTs and skilled LIS professionals, an institution progresses towards its own growth and development.

The advent of Information Communication Technology has changed the way how companies do their business and how they communicate with all interested stakeholders. The advent of a new medium has also had a strong influence on stakeholders’ expectations. Hassan S. Dala (2009) emphasizes the role of ICTs in academic libraries with reference to the achievement of the Millennium Development Goals.

“…. libraries build capacity and provide support and training for effective use of digital and other information resources…..the unique role of libraries and information services is that they respond to the particular questions and needs of individuals.” – Alex Byrne (2005). The modern library environment has witnessed revolutionary changes as a result of the rapid advances in information communication technology. Such remarkable changes demand new roles for LIS professionals from custodian of print materials to ICT based knowledge manager. Libraries have to take up information literacy programs along with the user education programs. Information literacy is a pioneer step that is significant in the contemporary environment of rapid technology changes and innovations with proliferating information resources. Information literacy is the ability to recognize, locate, evaluate and use the information effectively (ALA 1989). Information literacy is very essential to provide information with authenticity, validity and reliability. It leads to master content and extend their investigations which is more self directed. Information literacy has brought in dynamic changes in acquisition, organization and dissemination field of information. It is highly challenging for LIS professionals in this age of information explosion to disseminate the information available through various sources.

The LIS professionals are required to gain the knowledge of computers and related tools. The knowledge on operating system is the primary requisite to handle computer systems which is the basic ICT tools available in modern libraries. In the
present times, programming languages have become essential for webpage design and managing open source software. Library automation has become a great necessity for the LIS professionals. They need to have basic knowledge of library automation. The LIS professionals also require adequate training and orientation on application of knowledge in automating the modern library. Digitization and institutional repositories have become the latest ICT tools of modern libraries. The web-based services are also introduced in modern libraries to provide better services the users. The LIS professionals have the responsibility of using various tools to build a close relationship with users and redesign library services according to the needs of users.

1.3. Higher Education in India

Indian universities constitute to one of the largest higher education systems in the world. Before the independence (1947) there were only 20 universities and 500 colleges in India. After 1947 the number of colleges and universities has tremendously grown higher 687 colleges and more than 20,000 colleges.

Higher educational institutions are required to design their collections and services to meet their instructional, research and development programs. The introduction of ICT in libraries has improved and changed the face of information acquisition, processing, dissemination and storage. ICT has also facilitated networking, creation and accessing of remote electronic database, putting at the disposal of libraries and library users a wide range of information services and product. The use of ICT and access to electronic information networks is remarkably transforming modern libraries from book-centered to technology-centered institutions.

1.4. About VTU

Visveshraya Technological University established in the year 1998, is the largest in India and the dream come true of the great visionary Dr.Sir.M.Vishveshwaraih. With a 115 acre of wide campus at Belgaum, having 208 colleges affiliated to it today, having 67100 Undergraduate students and 12666 Post Graduate students all over the State of Karnataka. It has four regional centers at Belgaum, Mysore, Bangalore and Gulburga. It offers UG, PG and Ph.D programmes and has recognized 80 research centers across the state. VTU has ushered a new paradigm in the field of technical education by bringing all the engineering colleges under a single umbrella, which has brought an uniformity in its functioning too. The
VTU has 13 Quality Improvement Programme (QIP) Centers in various affiliated colleges and 16 extension centers offering PG programmes. Technical Education Quality Improvement (TEQIP) program has also been initiated by the Ministry of Human Reseouce Development of India, to develop the quality of technical education. The university aims at becoming a prominent center of excellence in the field of engineering science, technology and management in the country. Its mission is to produce world class knowledge-delivery, research, extension and leadership in technology innovation which benefit the nation. The VTU has planned to develop value-based technical education in order to generate qualified, skilled and competent engineering manpower.

The VTU has a well developed research portal. The research portal enables the faculty, researchers and students to obtain specific information about specific areas of research. The portal helps the research scholars and students to gain the benefit of access to relevant research findings. The university also provides financial support for various research endeavors. The portal contains the abstracts of research papers and dissertations to the scholars and researchers. The outstanding contributions of the researchers and their innovative contributions will also figure on the portal in future. The engineering colleges are functioning under the overall guidance and support of the policy makers and other stakeholders of VTU.

1.5 Engineering College Libraries

The aim of any library is to maximize the use of resources and satisfy the users. Reference services, cataloguing and other library services are to encourage the use of scholarly information. In order to bring in a quality and value added ICT based services, librarians should embrace the new and advanced technologies, be familiar with ICT tools and techniques to manage knowledge and utilize the information available to its fullest. In particular, engineering college libraries should have better and advanced IT infrastructure facilities to render ICT based services to its users (students and faculty). College Librarians should inculcate automation activities within their college libraries and develop best practices.

Students need their own internal navigation system to manage information. They are more experienced in retrieving information from the internet than print media. Thus, there is gap between the student behavior and the academic expectation.
It is here that engineering college librarians, who are experts, come to help by bridging the gap, by teaching both students and teachers how to find, evaluate, and use information effectively.

### 1.6 ICT Based Library Services

The services of modern libraries are now centering on information technology, especially in higher educational institutions. Application of ICT in academic environment in India and other developing countries has increased substantially over a period of time. The library environment has changed remarkably in terms of collection, organization and services. Libraries are indeed one of the organizations which actively use blogs and other ICT tools for information services. ICT trends have revolutionized the functioning of libraries.

Areas of library services where ICT applications can be implemented:

- Acquisition of resources
- Technical processing-OPAC
- Current awareness services
- Circulation
- Access to online information sources
- Digital library services.

### 1.7 Role of LIS Professionals

Students need their own internal navigation system to manage information. They are more experienced on internet than on print form of information. Therefore, there is a gap between the student behavior and the academic expectations. The librarians are the experts to bridge this gap by teaching both students and teachers how to find, evaluate and use information effectively. It is the prime duty of every LIS professional to update his own knowledge to the latest developments of his own field. Only then he can act as a torch-bearer to the society. Librarians are the motivators to the users specially the youth (students) to reach to right information at the right time without wasting time. A well maintained college library is always a welcoming sign to users. Librarians have to secure a future cyberspace among the cybrarians, web masters, knowledge managers and knowledge officers. LIS professionals require dynamic ruthless pursuit of new roles if they have to survive and practice empathy,
tireless dedication and commitment, professional ethics, along with a service for free
orientation for the benefit of the society at large. They have put forth their interest and
efforts to be proficient and efficient in using ICTs. Due to technological changes, LIS
professionals are expected to be proficient in collection, organization and
dissemination of information to suit the needs of the users. Technically qualified LIS
professionals should also be knowledgeable and should play the role of leaders in
preparing students for the information age. Thus, they become leaders, teachers and
trainers. Librarians should also possess teaching skills, technical skills and
administrative skills. A traditional librarian plays his role as a custodian, guide and
public relation officer. The role of 21st century librarians is as information broker,
technology application leader, facilitator, educator so on and so forth. Librarians are
now the front liners as IT specialist and information providers.

1.8 ICT Skills among LIS Professionals

According to Culshaw (2004), Information Communication Technology (ICT)
is the term used to designate the broad field encompassing areas such as
telecommunication and networking information delivery, office systems, expert
systems, digitization, speech recognition, hard ware and soft ware, data formats and
data system.

The success of modern organizations primarily depends upon the quality and
competence of the manpower. The LIS professionals always matter most from the
point of view of organizational development. Likert (1967) rightly remarked that all
the activities of an enterprise are initiated and determined by persons who make up
the institution. Every aspect of its activities is determined by the competence,
motivation and general effectiveness of its human organization.

ICTs have brought about a new age of globalization of knowledge and
expertise. The LIS professionals in engineering colleges are required to develop ICT
skills in order to meet the requirements of the modern users and perform various tasks
coping up with the changes in technological environment. It is very important to
ensure that the staff is able to have time away from their formal duties for both formal
and informal ICT training.
The ICT skill of the LIS professionals refers to:

- Subscriptions and access to online journals.
- Access and retrieval of web based information resources.
- CD-ROM browsing and search services.
- Access to digital libraries and online databases.
- Use of library automation software packages to discharge the library functions (OPAC).
- Web designing, creation and maintenance of library website and library blogs.
- Creation and maintenance of databases using RDBMS software.
- Skills pertaining to hardware and networking.
- Knowledge and skills pertaining to operating systems, programming languages and other library application software.

Information scientists like Broady –Preston (2001), Ashcroft (2004), Bawden (2005), Lewis (2007) and Parry (2008) have pointed out that exposure to ICTs and skills is a prerequisite to the LIS professionals since ICT based skills, together with management, teaching and market awareness and interpersonal communications competencies figure prominently are under essential requirements. In particular, the study carried out by Terry (2001) highlights the importance of continuing education, professional development and ongoing training for LIS professionals.

Core competency is the fundamental knowledge or ability related to a specific subject area or skill set. The core part of the term refers to the underline standing from which an individual can build specific abilities related to a task or job. Core competencies are set of standards for work based activities. Competencies most often are integrated into job descriptions and professional development goals. Training plays large role in several of the competency implementations in libraries. Susan M. Thompson (2003). As a result, LIS professionals are increasingly being expected to provide the initial troubleshooting and simple problem resolution for the technology in their areas.
Library profession is witnessing a sea change in the age of information explosion. It is also known for increased application of ICTs. The provision of information according to the demands of the customers is challenging. Continuous professional development activities are inevitable in modern libraries. It is a means of supporting LIS professionals in the work place to understand more about the working environment and explore new possibilities of reaching out to the various stakeholders. Technological advancement is the most important factor that necessitates continuous professional development. These activities provide ways to keep abreast of the changes in the changing information environment and to broaden the skills to become more efficient in the work place.

The rapid growth of ICTs and e-resources has posed new challenges for the LIS professionals in modern libraries. The technological changes and the use of electronically stored and retrieval information systems have changed the way user’s access, retrieve and use information. The LIS professionals are required to gain the knowledge and expertise in dealing with e-resources. Jewell (2004) advocated that an systematic electronic resources management system should be encouraged in order to efficiently select, evaluate, acquire, maintain and provide access to e-resources.

Modern libraries should implement electronic resource management system which can provide necessary opportunities for LIS professionals to learn new technologies and function effectively. This would enable the LIS professionals to improve and streamline a library’s selection, evaluation, acquisition and maintenance of electronic resources. The emergence of ICTs has drastically improved the status of libraries across the globe. The LIS professionals should be enabled to ably use and access electronic resources because their use leads to better research and development in all walks of human life.

1.9 Need for the Study

In a developing country like India, it becomes necessary to recognize the situation that currently exists regarding the ICT developments. Studies conducted so far reveal that it is important for a library staff not only to be well equipped with qualities like motivation, morale and zeal, also to have competent ICT skills to face the new technological challenges.
The review of literature shows that studies on these issues have been conducted in general and not in particular like INFORMATION COMMUNICATION TECHNOLOGY SKILLS AMONG THE LIBRARY PROFESSIONALS OF ENGINEERING COLLEGES IN KARNATAKA. Adequate studies have not been conducted in this area to identify the constraints and to suggest measures for continual improvement.

The study intends to project the competency of the library and information professionals with ICT skills in providing the information services to the user community and stakeholders and tries to bring out the factors affecting the lack of ICT skills among the library and information professionals (professional and semi-professional). There is need to know the level or competency of ICT skills of library staff, particularly in engineering colleges. It is appropriate to find out as to what extent the LIS professionals of engineering colleges possess sufficient knowledge of new ICT skills which are essential for effective management of libraries. This study is required not only to identify the lacunae but also to find solutions to improve the quality of library services and the ICT skills of staff working in such academic libraries. Hence the researcher chose ‘Information Communication Technology Skills among the Library Professionals of Engineering Colleges in Karnataka’ for the present study.

1.10 Statement of the Problem

The research problem envisaged the title “INFORMATION COMMUNICATION TECHNOLOGY SKILLS AMONG THE LIBRARY PROFESSIONALS OF ENGINEERING COLLEGES IN KARNATAKA: AN ANALYTICAL STUDY”.

1.11 Definitions of the key concepts

ICT (Information Communication Technology) stands for networked technologies with multi-nodal interface. That is, networked computers, range and types of communications and other technologies which allow multimodal interface communications. ICT is a umbrella term that includes any communication device/application.
Skills are individual’s special ability or expertise and capacity that is possessed from special knowledge or training, to smoothly carry out complex activities/job functions that include cognitive, technical and interpersonal skills.

ICT skills refer to the Information Technology (IT) and the Communication skills which are frequently referred together as Information and Communication Technology (ICT skills). They are related to the use of computers and the ability to transmit stored information through networks. It involves receiving, storing and resending of digital information. ICT skills spills over into all aspects of library work.

IT and ICT are interdependent. If IT is the machine, ICT is the product. While IT implies one-way communication, ICT implies interaction between the user and the data.

Technical Knowledge is a possession of a designated level of technical skill in a specific technical area. It is the ability to keep up with the current development and trends in areas of expertise acquired through academic, apprenticeship or on job training.

Core Competency is the fundamental knowledge or ability related to a specific subject area or skill set. The core part of the term refers to the underlying understanding from which an individual can build specific abilities related to a task or job. Competency consists clusters of knowledge, attitudes and skills that affect an individual’s ability to perform. It implies that understanding goes beyond a basic ability of being well qualified or proficient at the task, although some experts assert that competencies should simply define the abilities to adequately perform the role.

Technology Competency refers to those abilities that either require the use of digital technology to accomplish a task, i.e., ability to use a computer, bar code scanner, and circulation software to check out books to users or require an in-depth understanding of the technology itself in order to support existing systems. People with the first level of ability are often called users and people with the second level are called information technology support. A third type of competency could also be distinguished – creators, who develop new or customize existing technology.

LIS Professionals are those who record, organize, retrieve and disseminate printed and digital information. In this study, LIS professionals refer to the Chief
librarians and other library staff. The professional culture is sustained by formal associations, consisting of values, norms and symbols which facilitate systematic management of libraries. The LIS professionals are also governed by the professional norms and guidelines.

Analytical studies are those that identify and quantify association, recognize the causes and determine the existence of association between variables. It is used to compare two or more groups in a set of data. In this study, statistical techniques are used to analyze the ICT knowledge and skills of the LIS professionals to determine the association between the variables.

1.12 Objectives of the Study

The main aim of the study is to know the level of competency among the LIS professionals, which includes professional and semi-professional staff of the library and their ICT skills while rendering information services. Further, it is also intended to determine what kind of training and orientation is needed for the library professionals to handle information technology infrastructure for the provision of effective information services. Keeping these in mind, the following objectives have been framed:

The specific objectives of the study are:

1. To know the existing IT infrastructure in engineering college libraries.
2. To study and understand the existing level of ICT knowledge, skill and competencies among the LIS professionals.
3. To identify the constraints faced of LIS professionals while rendering ICT based library services.
4. To identify the specific areas of ICT based trainings needed by them.
5. To suggest suitable measures for the development of ICT skills of LIS professionals.
1.13 Hypotheses of the Study

The following are the hypothesis of the study:

1. IT infrastructure facilities in most of the engineering college libraries are poor for rendering advanced ICT based library services.

2. ICT Knowledge and skills of majority of the LIS professionals working in the engineering college libraries of Karnataka are inadequate to effectively render the ICT based information services.

3. LIS professionals need more exposure and training in ICT applications to render ICT based information services.

4. LIS professionals working in the engineering college libraries of Karnataka face constraints in acquiring ICT skills due to various reasons.

1.14 Scope and Limitations of the Study

If librarians are to use the new technology, they must possess IT knowledge and ICT skill too. These key areas affect all staff working in libraries as strategic or operational managers, technical support or service providers. The scope of the study encompasses the ICT skills of LIS professionals working in engineering colleges of Karnataka. However the study has following limitations.

a) The study is limited to Karnataka state only.

b) The study includes only the engineering colleges (Government, Aided and Private) of Karnataka, which are affiliated under Visweshwariah Technology University (VTU), Karnataka, approved by AICTE (excluding Mysore Government Tool Room and Training Center).

c) The study covers only LIS professionals and the Semi-Professionals but not any other category of staff of these engineering colleges.

d) The study does not cover Industrial libraries and libraries that do not provide education to students leading to awarding of degrees.

The present study is intended to cover all the librarians (professional and semi-professional) working in the libraries of engineering colleges [affiliated to VTU] of Karnataka State. The study will mainly focus on the Information Communication
Technology skills of all the library professionals working in the libraries of the engineering colleges that come under VTU affiliation in the state of Karnataka.

**Professional staff** are those having professional qualifications like, either a bachelor’s or a master’s degree in Library and Information Science. They discharge professional duties like overall administration of the library functions, acquisition of documents, technical processing, reference service, etc.

**Semi-professional staff** are those possessing a basic Degree or Diploma or a Certificate course in Library and Information Science and who discharge semi-professional duties like accessing of documents, filing of catalogues entries, maintenance of stacks, assist in IT wing and engaged in making online catalogue entries.

1.15 **Schema of the Study**

Chapter I - Introduction

Chapter II - Review of Literature

Chapter III - Research Methods

Chapter IV - Analysis and Interpretations of Data

Chapter V - Summary of Findings, Recommendations and Conclusion

Bibliography and Appendices (Questionnaire part I & II and list of colleges under study)

1.16 **Summary**

The crucial importance of ICT skill development among LIS professionals becomes highly relevant in the present times since the world moves towards the knowledge-based society. Public libraries and virtual libraries complement each other’s services instead of competing with each other according to recent empirical investigations. The development of ICTs and application of ICTs in higher educational institutions have changed the intellectual environment in general and the role of LIS professionals in particular. Application of ICT in academic environment in India has increased remarkably in the recent decades. The engineering colleges of Karnataka State are no exception in this respect. The present study examined the
Information Communication Technology skills among library professionals in engineering colleges of Karnataka State. The analysis of the data represents the extent and level of ICT skills possessed by the LIS professionals of these institutions. Modern engineering college libraries have to provide adequate means and methods of acquiring ICT skills by the LIS professionals. Scholars have outlined the ICT skills of LIS professionals which make them suitable for a variety of designations in the diverse fields such as software, database and information area, publishing trade and outsourcing opportunities. Efforts should be made by the LIS professionals and stakeholders to develop various sources for gaining more ICT knowledge and skills. Constant use of ICTs will not only develop and update the knowledge and skills of LIS professionals but also will increase and improve the speed and accuracy to bring a faster and easier means of communication globally. Hence, the present evaluation assumes profound professional significance in the age of content management in networked environment.
REFERENCES


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