CHAPTER – I

INTRODUCTION

1.0 Introduction
1.1 Academic Libraries in the Changing Environment
1.2 Technology – An Agent of Change
1.3 Need for the Study
1.4 Scope and Limitations of the Study
1.5 Statement of the Problem
1.6 Objectives
1.7 Hypotheses
1.8 Methods and Techniques Used in Research
1.9 Chapterization
1.10 Summing Up

References
1.0 Introduction

The significant developments in the field of Information and Communication Technology (ICT) have created revolutionary changes in all fields of knowledge. Libraries, being the reservoirs of knowledge, are no exception to this development. The society and environment around the libraries are changing and getting altered. As a result of information explosion, users are getting access to vast amounts of information.

In this information explosion era, libraries play a pivotal role in preserving and serving the information requirements of the users. In the present scenario, libraries are the main facilitators in the scholarly communication system. The communicated information has been selected, acquired, processed, stored, and retrieved by the library for current use and for prosperity. Therefore, the library is a place where books and other sources of information kept for teaching, learning, research, and extension activities.

Electronic information resources are diminishing the central role of traditional libraries. Librarians need to accept their responsibilities as information specialists in the new paradigm. Due to information explosion, the traditional library services such as reference service and selective dissemination of information need to be supplemented by selective elimination of information and the evaluation of information to separate quality
information from junk. This change has brought libraries and librarians to the threshold of a new era.

In the changing information environment, the influence of the new Information and Communication Technologies (ICTs) in libraries has converted the concept of library-in-a-desk into a reality. This revolutionary concept, which envisages paperless information system, has brought about drastic changes in library services. The traditional house-keeping operations and services are diminishing day by day, giving rise to modern dynamic library services as libraries without walls, providing access to world information and to the most up-to-date and comprehensive information resources.

Also libraries are confronted with an explosion of information both in print and electronic formats and a plethora of newly arising publishers and aggregators of electronic information sources. In today's information age, the pool of information available continues to expand enormously. The Information and Communication Technology (ICT) and, in particular, the www and Internet have transformed the way we create, transmit, store, process and manipulate information. It has been seen from the world statistics on Internet usage that there are 1.08 billion (Computer Industry Almanac) Internet users (as on 2005) in the world (www.internetworldstat.com). Compared with other information resources, electronic networking offers advantages like expansion of information sources, timeliness of information, multimedia and hypermedia effects and availability of information in electronic format. As a result, the
preferences of information seekers are shifting towards electronic and online information resources.

In the changing information environment, electronic information resources are dominating in the research activities and in turn researchers have realized the importance as well. At the same time, the usage of electronic information resources is also gaining momentum day by day. The studies conducted by the Stanford University Libraries (e-JUST user study, 2000), one of the largest projects to date is the Stanford E-Journal Study (e-JUST), IMPEL2 (Impact on People of Electronic Libraries) programme (eLib) project based at the University of Northumbria (Day, et al., 1996) and Research Support Libraries Group (2002) reveal that there is a good deal of electronic information resources usage. Works of individuals (discussed in detail in review of literature chapter) in India as well as abroad indicate that there is an impact of electronic information resources on users’ study, research and teaching activities.

1.1 Academic Libraries in the Changing Environment

Higher education and research, which advances knowledge, thrives on the exchange and accumulation of information and ready access to new ideas and theories. The role of academic library with regard to these functions is unique. It collects, consolidates, organizes, repackages and disseminates information – the recorded or communicated knowledge to the academic community and supports the generation of new knowledge. The uptodateness
of contents in courses, the continuous academic growth and competence of teachers and the quality of learning environment depend on how effective the academic library is in identifying and connecting information on latest developments in various branches of subject concerned with academic, research and scientific community of the campus.

The task of academic library has become more challenging and complex due to information explosion, information overload and revolutions and evolutions in the field of Information and Communication Technologies (ICTs). There is an enormous growth of new developments both in application and pure thought that has resulted in the flooding of recorded knowledge. There is a mushroom growth of journals every year, and millions of research papers are published in specialized journals, in addition to those published in popular journals. Information and Communication Technology has augmented the basic medium for recording and transmitting knowledge. Communication media / channels and the creation of networked information systems are opening up new vistas and horizons.

These new technologies have knocked down the walls of the conventional library by introducing online databases, CD-ROM, DVDs video disks and other even more exotic media. Now information in databases is available to users on a global basis beyond the confines of national / local boundaries. Wide geographic coverage has been made possible by the creation
of extension networks. CD-ROM technology allows the storage of large quantum of information on compact, durable and highly portable medium. This being the state-of-art-in live library systems, academic institutions have to modernize their libraries by using current Information and Communication Technology (ICT), if they are to meet effectively the information requirements of the academic community.

Today, digital technologies are bringing about revolutionary changes in the way the information is stored, retrieved and disseminated. These have profound impact on the ways academic libraries function and open up electronic access to information for millions of users. Academic scenario, over the years, has undergone tremendous changes, assuming new dimensions influenced by the technology driven applications. Instead of a building that holds books, the library is now evolving into an electronic portal and subject gateways to a growing global collection in digital content. The emerging demand for the electronic information resources may warrant the restructuring of the academic libraries to digital academic libraries. The doors of these libraries are open 24 hours a day, seven days a week and the library’s holdings come to the user as and when needed.

Distance education is also one of the fastest growing trends in higher education today. Its growth has been enhanced by the increasing availability of electronic information resources accessible to distance learners at remote
places. Academic librarians are playing a key role in supporting distance learners. The development of advanced networks such as Internet will require academic librarians to become technology experts, as materials are further developed, archived, annotated, distributed and managed. Rosseel (1999), a program officer at the Association of Research Libraries, discussed recent innovations in distance education and the supporting role of academic librarians.

Academic libraries in India have been affected by an uncertain financial environment in which resource buying has been restricted, causing them to look at ways of extending their purchasing capabilities to compensate for reduced budgets. Cummings et al. (1992) explain that over the past 20 years, although libraries have had to consistently reallocate library budget which did not accommodate increased journal costs, yet the overall library budget has not increased. As a result, subscriptions to most of the important journals are being cancelled. To overcome this problem, libraries are switching over to consortium. Library Consortium is the emerging toolkit for libraries to survive in the present circumstances. Co-operative purchase option through consortia provides wider access to information resources over the Internet. The efforts and initiatives to enhance access to electronic journals and electronic information resources to the academic community in India has resulted in two major consortia based programmes. One is Indian National Digital Library in Engineering Science and Technology Consortium (INDEST) (http://www.
indest.iitd.ac.in), the other consortium is the UGC-Infonet (http://www.inflibnet.ac.in) programme of the INFLIBNET. Under these programmes, Universities, R & D Institutions and Colleges across India have been enabled to build information infrastructure for accessing the electronic information resources subscribed by the INFLIBNET.

1.2 Technology – An Agent of Change

The significant factor that is causing libraries to change is the force of technology itself. In the last two decades, for example, the spectacular spread of television, computers and communication satellite have revolutionized the communication system in the world. Man’s appetite for new means of communication seems insatiable. No matter how many new technologies are developed, there is reluctance to let go the old.

In addition to the use of computers, libraries have begun to utilize telecommunications technology. Until recently, the idea of tying libraries together with telecommunications network was considered a costly affair. However, there are new developments in communications technology such as fibre optics, packet switching and direct broadcast satellite transmission, portend lower by the nation’s libraries. Becker has (1971) rightly pointed out that as these new arteries of communication connect more and more Libraries and Information Centers, the prospect of creating a national network of
Introduction

information resources is likely to become a tangible telecommunications reality.

1.2.1 Growth of Information Technology (IT)

The human civilization is now moving fast to an age which is characterized as an information age. This transformation of the society is the outcome of massive growth of information at all levels. Information has become the life-blood of complex industrial societies, and is growing day by day. Rapid changes in technology and communication have created the need for acquiring new skills and knowledge in present day work environment.

Information technology is a boon for mankind. It gives accessibility to information on fingertips. There has been discussion on information highways and high-tech libraries. The promising and diversified possibilities of information technology have reduced the space and time between people, country, and continent and have ultimately led to the emerging concepts of global society and global village.

1.2.2 The Technology of Recording and Storing Data

The development of this technology has been determined by the storage media used at various times in history.

- Clay tablets
- Paper
- Punched cards
- Film media
- Magnetic media
During Babylonian civilization (300-1000 B.C.), man used to record his transcriptions, laws and other information on clay tablets which had many limitations. After a lapse of several ages paper was invented by Egyptians, manufactured from the leaves for rushes, and it was light in weight. The medium was followed by paper and ink, which was invented in 105 A.D.

Paper provided better and durable writing medium than the earlier fragile ones. The other most important landmark in the history of recorded knowledge was the invention of movable Printing Machine by Gutenberg in A.D. 1438. These developments were originally based on manual methods, and further on mechanical methods, and in more recent times on electromechanical methods. Electronic machines have been applied almost all the activities of the organizations, further increasing the speed of data recording and processing.

The next major developments in recording media were punched cards in the 19th century which stored data as a pattern of holes punched in a card. Each card hole has one record, which might be the record of a sales transaction, a purchase transaction or stores record, etc. This equipment was very large and very expensive. After punched cards computers came on the scene. Computers were first used commercially in the mid 1950s, but their size and cost put them out of reach of all but a few largest organizations. It was not until the introduction of chips in 1960s that the computers became smaller, cheaper and
more reliable and available to a wider range of business. Computerization of various library house-keeping operations has led to offering additional services and functions within an organization which has significant impact on communication and co-operation between branches and departments eliminating duplication in record creation, filing and storage, which makes it easier to establish and monitor responsibility for specific record management.

Afterwards the documents were produced in reduced form due to their more storage capacity, i.e., microform. Microfilm, microfiche, micro card were used to store the information. The convergence of computers and telecommunications improved the technology by means of communicating, data storage and data transfer. Electronic mail, electronic journal, video-text, tele text, fax, document delivery, online search and networking are made possible due to new facilities for rapid and cheap transmissions of information (Singh, 2004). With the help of video-text, tele text, e-mail and fax, the whole world is turned into a global village. Thus, the use of telecommunications, in conjunction with the computers has made it possible to process information and to transmit information to any location instantaneously.

1.3 Need for the Study

India has one of the largest higher education systems in the world (http://education.nic.in/hgedu.asp). Fast changing curricula, modes of formation of different subjects (micro-subjects), globalization of education and
competitive research has increased the demand for scholarly information over the years. University Grants Commission (UGC) initiated the UGC-Infonet E-Journals Consortium programme to modernize the university campuses with state-of-the-art-technology by establishing a nationwide communication network. Through this programme a large number of electronic resources are subscribed and provided access to students, research scholars and faculty members working in universities and colleges.

The UGC-Infonet programme has changed the information seeking patterns and raised the expectations of the users. More and more users expect to be able to find everything online, full text. Usage statistics (Cholin, 2006 and http://www.unicat.inflibnet/econ/usage.htm) of different databases also reveal that there is a considerable measure of usage of these resources, and it is increasing day by day.

The above paragraphs explain the present situation of information needs of users. These conditions necessitate to study the extent of use, acceptance and impact of electronic information resources on users. In the context of university libraries in Karnataka no such impact study in these lines has been undertaken. Whatever studies have been made in India, they hardly tried to study the use of electronic information resources. A literature search on Library and Information Science Abstracts (LISA), Indian Library Science Abstract
Introduction

(ILSA), convention volumes revealed complete lack of in-depth studies on the topic. Hence the present study has been undertaken.

1.4 Scope and Limitations of the Study

The scope of the present study is limited to study the impact of electronic information resources on users in the university libraries of Karnataka State. In the broadest sense electronic information resources include CD-ROM Databases, E-Journals / Databases, Library Portals / Aggregators, etc. The present study has limited to six Universities, viz. Bangalore University, Gulbarga University, Karnataka University, Kuvempu University, Mangalore University and University of Mysore. The population of this study consists of three categories of users, i.e. Faculty Members, Research Scholars and P.G. Students of Science and Technology faculty.

1.5 Statement of the Problem

IMPACT OF ELECTRONIC INFORMATION RESOURCES ON USERS IN UNIVERSITY LIBRARIES OF KARNATAKA STATE: AN ANALYTICAL STUDY.

1.6 Objectives

The primary objective of the present study is to examine the impact of electronic information resources on the users in university libraries of Karnataka State.
The specific objectives are:

1. To study the present situation of the use of Electronic Information Resources (EIRs) available through the UGC-Infonet Programme in the Six University Libraries of Karnataka State.
2. To study the adequacy of EIRs in university libraries.
3. To study the different purposes of using EIRs.
4. To determine the impact of EIRs on academic community.
5. To know whether the libraries are providing Information Literacy programmes for an effective access to EIRs.
6. To identify the problems and difficulties faced by the users while accessing and using EIRs.
7. To suggest suitable recommendations to provide the EIRs and services for the benefit of users.

1.7 Hypotheses

1. Internet has a positive impact on study / research / teaching activities of library users at universities in Karnataka State.
2. Library users have shown a high degree of awareness about the electronic information resources through UGC Infonet Programme.
3. Availability of electronic information resources leads to the improvement of study / research / teaching activities of library users.
4. Users feel that accessing information in electronic form is far more convenient than in print format.

5. Users faced problems due to lack of suitable personal computers and bandwidth in accessing and using electronic information resources.

6. Users need proper training, orientation and guidance on how to access and use electronic information resources.

7. Availability of electronic information resources has increased to a great extent the contribution of research papers by the users.

1.8 Methods and Techniques Used in Research

The Oxford English Dictionary defines method as a mode of investigation; a special form of procedure adopted in any branch of mental activity for investigation and inquiry (OED, 1978) and methodology as the study of the directions of empirical research. In its broad sense, methodology refers to the processes, principles and the procedures by which one approaches a problem to seek solutions. A researcher adopts certain techniques and procedures for studying a research problem, which are enumerated in the methodology.

1.8.1 Research Design

A research design is a plan of the proposed research work. It is a blueprint, and, therefore, at its best only tentative. Changes in the design are permitted and are dictated by considerations during the operations of the project. In other words, a research design is not a highly rigid plan to be
followed without deviation, but rather a series of guide-posts meant to help one proceed in the right direction.

The present research design consists of formulating the research problem, comprehensive review of the available literature, defining the scope of the study and its limitations, formulation of hypotheses, collecting, processing and analyzing the data and, finally, enumerating the inferences and conclusion (Kothari, 1985).

For this study data has been collected through various methods viz. historical analysis, literature survey, questionnaire survey and lastly personal interview. Historical analysis and literature survey were useful in collecting textual data from published and unpublished sources. Questionnaire method is quite useful in soliciting information from the faculty members, research scholars and P.G. students of universities of Karnataka state. Hence, the data collected for this study has the combination of primary as well as secondary data.

1.8.2 Data Collection

Data serves as the basis or as the raw material for analysis. Without the analysis of factual data, no specific inferences can be drawn. Inferences based on imagination or guesswork cannot provide correct answers to research questions. The relevance, adequacy and reliability of data determine the quality of findings of the study. Hence the importance of data for any study.
1.8.3 Questionnaire Survey

Considering the nature of problem, the most suitable method for data collection is the questionnaire method. A questionnaire is a written document, listing a series of questions pertaining to a problem under study, to which the investigator requires the answer. It may be defined as a data gathering device, containing a list of logically arranged written questions on a problem under investigation for which the researcher require responses for testing hypotheses.

Hence this survey has been undertaken with the help of a questionnaire designed for the purpose. While designing the questionnaire, care was taken to include both closed and open-ended questions. Multiple Choice Questions enhance the response, as they are easy to fill up. Hence they were included in sufficient numbers. Wherever necessary, interviews with a few users to interpret the questions to them and to collect the required data were also held.

1.8.4 Distribution of Questionnaires

The researcher tried several methods to distribute the questionnaire among library users. Faculty, research scholars and students were approached in the library and requested to fill up the questionnaire. Several faculty members and research scholars were approached in their chambers, laboratories and were persuaded to fill up the questionnaires. Some research scholars and P.G. students were approached in their hostels. Librarians of different universities were given several copies of the questionnaire and were requested
to get them filled up by students and research scholars, whenever it was convenient for the users.

1.8.5 Sample Size

The sample was drawn from six universities, viz., Bangalore University, Gulbarga University, Karnatak University, Kuvempu University, Mangalore University and University of Mysore. Since the users' number, that is, users population size, is very large, Random Sampling Technique has been applied. In order to assess the users' perception about the impact of Electronic Information Resources, 50 % of total number of faculty members is surveyed, and research scholars’ sample size is 60 %. The number of P.G. students in these universities runs into thousands. Hence sample size was limited to 6 %.

1.8.6 Pilot Study

It is very essential to pre-test the questionnaire before the actual study is carried out. This serves the purpose of eliminating ambiguity in questions and the difficulties in translating the objectives of the survey into a set of questions. The researcher pre-tested the respective questionnaire against a small group of sample population consisting of 45 library users, consisting of 15 faculty members, 15 research scholars and 15 P.G. students of Gulbarga University, Karnatak University and Kuvempu University.
Suggestions received through the pilot study helped in revising and restating certain questions in the questionnaire. After the pilot study, the questionnaire was refined and finalized. The refined questionnaire was administered to the sample population.

1.8.7 Analysis of Data

The analysis of data is the most skilled task in the research process. Analysis means the critical examination of the assembled data for studying the characteristics of object under study and for determining the patterns of relationships among the variables relating to it. A research work starts with formulation of hypotheses. The analysis of data helps in either rejecting or accepting the hypotheses.

In the present study, the data collected from the published sources and the questionnaire have been evaluated and analysed to find out the results. The data from the questionnaire has been fed to computer by using Statistical Package for Social Science (SPSS), and the output was checked and corrected if there be any typographical error. Statistical analysis of the data was made with the help of SPSS Software. The same tool was used for presenting frequency distribution tables, graphs and other tables of variables to establish relationship between them. In accordance with the procedures followed for qualitative research, the textual data has been organized, themes and patterns
generated, and, finally, hypotheses were tested through statistical analysis.

After interpretation, inferences and conclusion were drawn.

1.8.8 Statistical Measures Employed

Statistical tools help a researcher in studying the concentration and dispersion of user's opinion. The averages, namely Arithmetic Mean and Median are used to study the concentration of user’s opinion. Standard Deviation (SD), and Co-efficient of Variation are used to study the dispersion of observations. These measures are defined for the frequency distribution as follows;

1.8.81 Arithmetic Mean

The Arithmetic mean of n observations is given by

\[ \bar{X} = \frac{\sum f_ix_i}{N} \]  

Where ‘N’ is the total number of observations, ‘f’ represents the frequency of users, and ‘X’ denotes the variable used for the study.

1.8.82 Standard Deviation

The standard deviation for the frequency distribution is given by

\[ \sigma = \sqrt{\frac{1}{n} \sum_{i=1}^{n} f_i [(x_i - \bar{X})^2]} \]  

Where \( N = \sum_{i=1}^{n} f_i \) = Total frequencies, \( \bar{X} \) = Arithmetic Mean of X
Introduction

1.8.83  **Co-efficient of Variation**

The relative measure of Standard Deviation (SD) is the Co-efficient of Variation (CV).

\[ C.V.(x) = \frac{\sigma}{\bar{x}} \times 100 \]

Where  \( \sigma \) = Standard Deviation
\( \bar{X} \) = Arithmetic Mean

The Co-efficient of Variation is used to study homogeneity and heterogeneity of variation, the group is more consistent (or homogenous) and the more the Co-efficient of Variation the group is, the more the variable (or less consistent).

1.8.84  **ANOVA Test**

Analysis of Variance is a technique whereby the total variation present in a set of data is partitioned into several components. Associated with each of these components is specific source of variance so that in the analysis it is possible to ascertain the magnitude of the concentration of each of these sources to the total Variation. Analysis of variance is used for two different purposes.

i. To estimate and test the hypothesis regarding population variances and

ii. To estimate and test the hypothesis regarding population means.
In this study, analysis of variance has been used mostly for testing variances. The simplest type of analysis of variance is known as One-Way Analysis of Variance in which only one source of variation, or factor, is investigated. But Two-Way Analysis of Variance refers to the effects of two variables. In such a case there is interaction between two factors. If a change in one of the factors produces a change in response at one level of the other factor different from that produced at other levels of this factor. In such a case we consider the rows and columns, and the sums of squares are calculated separately for rows, for columns and also for the total, and the residual sum of squares will also be estimated.

1.9 Chapterization

The thesis has been divided into six chapters. A brief overview of each chapter is given below:

Chapter 1

The first chapter is an introduction to the research problem of the study. Discusses the role of academic libraries in the changing environment. Further, it outlines the prevailing information needs of users in the electronic environment. Also it provides a glimpse of the need, objectives, hypotheses, scope and limitations of the study, research methods and techniques adopted.
Introduction

Chapter 2

In this chapter, an attempt has been made to review briefly the important published and unpublished literature and studies on Information and Communication Technology (ICT), Collection Development and Management, Usage and Impact of Electronic Information Resources on Users.

Chapter 3

Chapter three deals with electronic information resources, history and development, definitions, collection development of EIRs, policies and procedures, selection criteria, management and evaluation criteria. It also throws light on pricing issues and models, licensing agreements, etc.

Chapter 4

The fourth chapter deals with brief profiles of all the 6 state universities and their libraries, viz., Bangalore, Gulbarga, Karnataka, Kuvempu, Mangalore and Mysore.

Chapter 5

Chapter five deals with analysis and interpretation of the collected data through the questionnaire from different category of users such as P.G. students, research scholars and faculty members in respect of use of Internet, awareness and purpose of using electronic information resources, etc.
Chapter 6

The last chapter covers the summary of findings, suggestions, conclusion and areas of further research. At the end, a selected bibliography and appendices are given.

1.10 Summing Up

Technological innovation in academic libraries has tremendously changed the ways in which library users find and use information today. Academic librarians must employ the best practices of management to address the contradictions and solve the problems caused by such rapid and accelerating technological integration.

Brown (1996) indicates that “by the end of the next decade there could be a wide range of new information systems which are not yet even on drawing board”. Electronic information represents an outstanding opportunity to meet the need of the research community and to stimulate among them new lines of exploration and work methods to pursue them.
Introduction

References


