1.1. Introduction

The advent of industrial revolution in Europe gave an impetus to mechanization. The great breakthrough in the use of machines came about during the 18 and 19th centuries when organized efforts were made in England and other countries of Europe, especially Italy, France and Germany, to replace human labour by carefully planned machines. Thus automation entered the world of man to replace manual work by machines.

The term automation is defined in the McGraw Hill Encyclopedia of Science and Technology as “Machinery that mathematically manipulates information, storing, selecting, presenting, recording input data or internally generated data required” 1 According to Webster’s Dictionary, the meaning of the term automation is “the technique of making apparatus, a process of a system operate automatically” 2

According to the Dictionary of Information Technology, automation is “The technology concerned with the design and development of process and systems that minimize the necessity of human intervention in their operation.” 3 The Computer Dictionary explains the term thus: “The generalized term used to convey the dedicated use or exploitation of automatic machines or device designed to control various processes, such as machine tools, routine office procedures, accounting and several thousand other applications.” 4

The Data Communication Dictionary defines automation as “ 1. the implementation of process by automation means; 2. the theory, art, or technique of making a process more automatic; 3. the investigation, design, development and application of methods of rendering process automatic, self-moving, or self-controlling; 4. the conversion of a procedure, a process, or equipment to automatic operation.” 5
Further the *Encyclopedic Dictionary of Information Technology* defines the term automation as “1. the theory of making process automatic; 2. the automatic implementation of a process; 3. the control of a production process by automatic means.”

1.2. Library Automation and Networking

Rapid advances in science and technology have made the use of computers necessary and even unavoidable in almost all fields of human life. In an age of ever accumulating information, such as ours, libraries, which are reliable information centres, ought to use computers in their day-to-day operations, especially, computer-aided information retrieval, which unlike the conventional and manual method, has enormous potential. Also, online information retrieval has become an immensely powerful tool for research and proved its extensive utility in the developed countries. Hence library automation has assured importance as well as urgency in the information world. In the present age of information explosion automation of library services is, therefore, imperative for efficiency and effective working of the library system. In India, the University Grants Commission (UGC) through the INFLIBNET programme initiated augmentation of automation activities in all Indian universities and college libraries in a phase-wise programme. But the progress has been very slow due to resource crunch and other inadequacies. Even to complete library automation at the university level, it may require decades. Unless college library automation is initiated immediately, at least on a smaller scale, it becomes difficult to join the mainstream of mechanization of Indian university libraries.

We are aware that the computer has evolved so much in its multifarious functions and uses that it has reached almost every area of human life, and libraries are no exception. The increasing use of sophisticated computer systems for the control and management of information has important implications for thinking.
about information in general and its storing, processing and dissemination in particular. The task of information generation has been facilitated by computers, especially, on-line access to databases, facsimile, and other document delivery and reproduction facilities.

The application of computer mediated communication and resource sharing to the creation and exchange of scholarly information has been anticipated for decades, but only recently have librarians begun to witness the kind of rapid increase in the use and utility of networked information that we have so long been expecting.

For the first time H.P.Luhn organized computerized indexes in the 1950s. It was in 1963 that W.K.Gilbert prepared a report on computerization of Library of Congress. On the basis of this report MARC-I project was started in 1966. Since then onwards computers have become almost essential components of library work in the developing countries.7

Automation leads to online search, which in turn leads to networking. A few definitions of these terms are presented here under.

On-line access to bibliographic and referral databases was the inevitable technological development of applying computers to the processing of bibliographic information. Actually on-line searching was first investigated in the 1950s and was publicly demonstrated by the Systems Development Corporation (SDC) in 1960 in USA. On-line information retrieval systems provide rapid access to a broad range of information at low cost. Libraries/Information centres around the world are finding such systems indispensable to everyday reference services. On-line searching has been defined as a "means of finding desired information, usually bibliographic references, by using a computer in an interactive mode."8

Online processing is defined in the Computer Dictionary as "the operation of terminals, files and other auxiliary equipment under direct and absolute control of the
central processor to eliminate the need for human intervention at any stage between initial input and computer output." 9

A network is nothing more than two or more computers connected together by a cable so as to facilitate exchange of information. Computer network is defined by John S. Quartermann as "a set of computers communicating by common conventions called protocols over communication media." 10 The National Commission on Libraries and Information Science (NCLIS) in its national programme document (1975) defined library network as "Two or more libraries and / or other organizations engaged in a common pattern of information exchange, through communications, for some functional purpose. A network usually consists of a formal arrangement where by materials, information and services provided by a variety of libraries and other organizations are available to all potential users. Libraries may be in different jurisdiction but they may agree to serve one another on the same basis as each serves its own constituents. Computers and telecommunications may be among the tools used for facilitating communication among them." 11

Swank defines library network as "A concept that includes the development of cooperative system of libraries on geographical, subject, or other lines each with some kind of center that not only coordinates the internal activities of the system but also serves as the system's outlet to and inlet from the centers of other systems. The concept is also hierarchical." 12

Therefore networking is one of the most effective ways of sharing the resources, which are always scarce to meet the information needs of users whose number, variety and expectations are constantly rising. Further, it also aims not only at resource sharing, but also in achieving economy in hardware, software, manpower, etc.

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1.3. Need for feasibility study

Whenever any new information technology is to be applied to the existing system, in libraries, it is essential to do a systematic study of the feasibility of the new system and its application; Feasibility study methods include the use of questionnaire, observation, and interview with library staff, management and users of libraries. The feasibility study of automation and networking should cover survey of current trends in hardware, software, network technologies, which are considered suitable to the new system. It also should estimate the cost of the new system. It should identify the benefits of different alternatives and their cost using the cost benefit analysis technique e.g. the net present value method.

The feasibility study has to spell out the ideal objectives of the new system or application and show how it proposes to overcome the limitations of the existing system\textsuperscript{13}. The present investigative study has chosen for its field all the colleges affiliated to Sri Venkateswara University and Sri Krishnadevaraya University in Andhra Pradesh.

1.4. Objectives of the study

The following are the objectives of the study:

- To over-view the existing situation of library automation in the selected college libraries;
- To estimate the infrastructure requirements for each college keeping in view the financial crunch;
- To assess the feasibility of library automation and networking plan for each college library under each university (i.e. colleges affiliated to each university);
- To trace the available facilities in hardware, software and manpower for selection and implementation in college libraries within their budget.
provision;

> To derive solutions for hardware, software and communication network requirements for automation and networking at the college library level;
> To identify appropriate networking models and methodologies that suit the Indian environment keeping in view the constraints of funds, automation levels in college libraries, non-availability of networking software and inadequate library personnel (staff) trained in the use of computers;
> To formulate a plan of action for a college library network within each university in a cohesive fashion; and
> To estimate the cost of the proposed plan for each college library and also the training requirements for the library staff.

1.5. Hypotheses

The following hypotheses have been formulated for testing:

> Majority of the college libraries in the selected universities may not have computers. But they may be eager to implement library automation and networking to have online access to information provided at manageable / minimum cost.

> Majority of users of college libraries may be eager to have internet accessibility through the World Wide Web (WWW) browsing.

> The college librarians may be willing to undergo computer training provided there is no financial commitment on their part.

> Private colleges affiliated to the universities may have a more positive attitude to computerization of libraries than government degree colleges.

> Majority of the private colleges may have computer centres unlike the government colleges.
1.6. Scope of the study and its limitations

This study focuses on the automation and networking of college libraries affiliated to each university in India, because libraries of university colleges are provided with network facilities under the INFLIBNET programme. However, college libraries (aided, unaided and government) generally suffer from financial crunch, because of the escalation of prices of both books and journals and the decline of rupee value against the major foreign currencies. The use of internet and its influence on users even at the college level emphasizes the need for library automation immediately. Therefore, it is the need of the hour for college libraries to join the mainstream of global library network.

The study covers the colleges affiliated to Sri Venkateswara University and Sri Krishnadevaraya University. Table 1.1 gives details of the number of colleges covered under both universities and also the number of colleges, which responded to the investigator's appeal for information.

Table 1.1: Number of colleges responded to the investigation.

<table>
<thead>
<tr>
<th>S.no</th>
<th>Name of the District</th>
<th>Name of the university</th>
<th>Total colleges covered</th>
<th>Responded colleges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Chittoor</td>
<td>S.V.U</td>
<td>50</td>
<td>32</td>
</tr>
<tr>
<td>2.</td>
<td>Cuddapah</td>
<td>S.V.U</td>
<td>53</td>
<td>24</td>
</tr>
<tr>
<td>3.</td>
<td>Nellore</td>
<td>S.V.U</td>
<td>41</td>
<td>17</td>
</tr>
<tr>
<td>4.</td>
<td>Anantapur</td>
<td>S.K.U</td>
<td>39</td>
<td>27</td>
</tr>
<tr>
<td>5.</td>
<td>Kurnool</td>
<td>S.K.U</td>
<td>50</td>
<td>41</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>233</td>
<td>141</td>
</tr>
</tbody>
</table>

The concept of a degree college (affiliated to any university), its principles, policies and procedures are more or less similar in the whole of India as all colleges have to follow the guidelines framed by the University Grants Commission. Conditions prevailing in their libraries and the problems faced, are apt to be similar all over the country. Therefore the findings of this study are likely to be of great
value to all colleges in the country, even though the present inquiry limits itself to two universities only in Andhra Pradesh.

1.7. Methodology of the study

The methodology used for data collection and presentation of analysis is given hereunder.

(a) Data collection

To know the existing conditions of college libraries with regard to collection, services, physical facilities, information technology infrastructure, etc., the questionnaire method was used. All the questions in the questionnaire are factual and intended to obtain correct information about conditions of which respondents are presumed to have knowledge. The questionnaire method has its usual limitations, such as the respondent’s neglecting to answer questions and giving irrelevant answers, thus lowering the response rate to the questions. These limitations have been minimized by supplementing the questionnaire method with interviews. Further, the questionnaire is so designed as to elicit relevant information pertaining to each college library in the study area. The questionnaire is divided into twelve (12) subsections: 1. General 2. Library physical facilities 3. Staff 4. Collection size 5. Technical processing 6. Services 7. Transactions 8. Budget 9. Equipment 10. Library automation status 11. Problems of the library management in automating the library 12. Suggestions with regard to library automation and networking.

There are 233 colleges in the study area. Among them 141 colleges are affiliated to Sri Venkateswara University and the remaining 92 colleges to Sri Krishnadevaraya University. Copies of the questionnaire were posted to the librarians of all these colleges. However, responses were received from 141 librarians only (i.e. 60.52% of total colleges). The annual reports of these two universities have also been utilized for getting the required information.
(b) Analysis and presentation

The data collected through the questionnaire was analysed according to the objectives and hypotheses of the study, using statistical techniques such as mean, median, mode, chi-square and Z test are used for better presentation. Microsoft word and Microsoft excel software packages were used for diagrammatical presentation of the data.

To know the latest trends in hardware and software and software technology useful for library automation and networking, related information was collected from various sources such as books, journals, especially caliber proceedings from 1994 to 2000 etc. Subject experts working in the universities and computer centres were also consulted.

To provide inexpensive and reliable intercity and international communication facilities, cognizance has been taken of the available network techniques and topologies. The services of INFLIBNET, DELNET, CALIBNET, and NICNET as well as the use of library related technology for automation and networking have also been examined.

1.8. Plan of the thesis

The thesis is divided into five chapters. The details of each chapter are described below,

Chapter - 1 is introductory. It deals with a statement of the problem of investigation, the scope and objectives of the study, hypotheses and methodology. These have been discussed in this chapter.

Chapter - 2 discusses the definition, growth and development of library automation, on-line access to information and networking. It provides a bird’s eye view of Information Systems and networking available both at the national and international level. It also discusses the Internet, intranet and extranet. At the end of the chapter it
deals with digital libraries and virtual libraries.

Chapter - 3 deals with the growth and development of Information Technology and its services useful to libraries. It explains the importance of communication technology and telecommunication techniques useful for Library automation and networking. It discusses multimedia technology and its application to libraries. It narrates computer hardware requirements for library automation and networking. It presents in brief the software packages available both at national and international level.

Chapter - 4 presents a brief account of the libraries of Sri Venkateswara University and Sri Krishnadevaraya University and of their respective affiliated colleges. It also deals with an analysis of the data relating to the degree college libraries under study.

Chapter - 5 highlights the summary of the study especially the summary of findings. It provides conclusion relating to study. This chapter enlists the possible suggestion based on findings drawn from the data analysis. Finally it provides a detailed feasible plan for college library automation and networking with implementation plan including Internet connectivity.
References


