CHAPTER 3
# REVIEW OF LITERATURE

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3.1 Introduction

One of the simplest ways of economizing an enquiry is to review and build upon the work already done by other researchers. Research in library science can help to understand the mechanism of information transfer and to improve this process both in quality and quantity. There are number of studies related to Information Technology in libraries, but most of them have concentrated on limited areas of interest. All the studies are not significant enough to be enumerate, however, an effort has been made to review and highlight briefly the objectives and findings of the important studies relevant to the present work in the following paragraphs.

3.2 Information Technology

Viswanathan (1995) express the Information Technology is the technology, which is used for information management that involves acquisition, processing, storage, retrieval and dissemination of information. As reprography, printing and publishing are all activities involved in information management; the corresponding technologies become part of Information Technology. But Murthy (1999) says that, the information technologies that are relevant to libraries mainly include; Computer technology, Telecommunication technologies, Reprographic technologies, Library technologies.

3.3 Current Developments in Information Technology

The on going Information Technology revolution had deeply affected almost all areas of our life and all aspects of human activity, libraries, information and documentation centers are no exception to impact of Information Technology. The development of Information Technology that has been acquired from developed countries and their use in India is currently dominating. The application of Information Technology in different types of libraries in India has gained sufficient momentum and it is of continuing interest to the information professional in order to provide Information Technology based information handling services.

Roffe et al (1995) expressed that a core component of Information Technology is the semi-conductor chip which, since the early 1980’s has only decreased in size and cost but has also increased steadily in capacity and complexity. Pushing to this opinion Tedd (1997) reported that very large scale integration of the electronic components that comprise any computer has resulted in a huge increase in the power available and a decrease in the cost of processing. The speed of processing and the amount of
information stored in main memory have increased dramatically over the years with a parallel decrease in their costs. The capacity of hard disk has increased greatly over the years from about 5 MB in 1980 to as high as 2.5 GB in 1996 with a dramatic decrease in the price of CD-ROM technology.

Chen (1997) opines that, during the last decade, there have been endless and dramatic technological changes in all three major area of Information Technology like computing, communication and content. We have witnessed the advent of personal computers, world-wide packet networks, optical disk and other mass storage media, interactive video technology, image technology, digitizing and scanning technology, computer graphic and the growth in size, variety and number of databases.

3.4 Library Automation Software

Library automation software is the lifeblood of all activities of the library. There are two types of library automation software, one is Stand-alone single application software and other is integrated library software. Now a days integrated library software is most popular in all types of libraries. Library software can be developed either in-house by the library using local expertise or purchased through commercial vendors. Some special libraries in India have made significant efforts in the development of library automation software during the last few years. (Harvu 1995).

Rowely (1993) suggest that, it is sensible to choose a commercially available package due to the advantages like; they are economical, the package comes as a well-tested set of programs, the software producer is likely to be a specialist in that kind of software, packages are well documented including detailed system specifications and user manuals, packages are available readily and can be implemented quickly.

3.5 Use of Information Technology Application in Library

Many library science experts have given varied factors and objectives that contributed to the computerization of the libraries. Computerization of libraries implies the change from manual system to the application of computers and other modern technologies to library activities and services.

3.5.1 Factors Contributed for Information Technology Application in Library

According to PSG Kumar (1987) the factors that contributed to the introduction of computerization in Indian libraries include; greater speed, increase in efficiency, capability to handle large volume of data, flexibility to numerous manipulation, improved services, economical in power consumption, availability of hardware and software facility, responsibilities trusted on the organization to enhance the prestige. Supporting
to this Laxman rao (1993) consolidated the factors contributed for library automation under the following aspects; economy, improvement of services, management information, co-operation and centralization, prestige and research. In addition to this Lancaster and Sandore (1997) listed the reasons as to cope with demands, to reduce staff or prevent staff increase, to allow more jobs to be performed by clerical or para-professional staff, to improve existing services and to collect better data to aid overall management of the library.

3.5.2 Objectives of Information Technology application in Library

As per Rowley (1993) the main objectives of computerization of libraries are; to accommodate an increased workload, to achieve greater efficiency, to introduce new services, to benefit from cooperation and centralization. Satyanarayana (1996) say's that, the broad objectives of library automation are; to improve the efficiency of library automations, to provide the type of services which relieve the professional manpower tasks which are routine, repetitive or clerical and to improve the cost efficiency of library operations.

3.5.3 Benefits of Information Technology Application in Library

Ekpenyong (1991) has listed the benefits of library automation. The benefits are; it improves services by making the work that was being done manually, better, faster and more effectively, it provides services and products that are not feasible with the manual catalogue, the systems eliminates skilled clerical and cataloging labour, book catalogues and accession lists can be produced automatically, thus saving considerable typing and proof-reading time, shelf list data stored by the computer and extensive subject bibliographies can be compiled using data from the computer.

3.5.4 Impact of Information Technology Application in Library

As per the study conducted by Sharma (1993), the use of computer in libraries of higher educational Institutions showed that the time taken for processing 500 books in a library manually as well as through computer was 1000 hours and 60 hours respectively. The point to be noted here is that the time required for typing/data entry was the same number of 40 hours for both the system. This indicates that a computerized system is about 50 times cost-effective compared to non-computerized one for the university libraries. In addition to this Ganpule and Waydande (1994) stated that library automation brought efficiency in house keeping jobs in Indian Institute of Technology library, Mumbai. It helped to bring the list of additions weekly instead of fortnightly with improved quality. The study of Hauptman and Anderson (1994) shows that the technology results in an improved perception of our role, status and upgraded staff image among patrons. And also staff felt technological innovations put more pressure
and is stressful. Himmelfrab (1999) opines that, we are experiencing a revolution, not only in library services but also in the very conception of the library. It may be with electronic revolutions on catalogues, indexes, database, books, journals, newspapers, archives, and even manuscript collection.

3.5.4.1 Impact of Information Technology on Housekeeping Operations.

3.5.4.2 Acquisition Section

Acquisition section is concerned with the selection of sources, placing the orders with a wide range of suppliers, keeping track of orders, receiving and recording of their receipt, settlement of invoices and maintaining detailed accounts of funds.

Farbour (1994) has observed that nearly 50% of the work can be reduced through computerized process. Automated system eliminates five tasks such as typing order records; filing order records typing catalogue cards filing catalogue cards and updating budget figures. Even if each of these five takes only one minute per item, this concludes considerable annual time saving.

3.5.4.3 Classification System

According to Kumar (1987), the benefits of the computerization classification are; in the selection of isolated terms, grouping and arranging them in hierarchical sequence, in synthesizing the class number, saves the time by avoiding references to the schedules of scheme for classification on and often, the constructed class number can easily be used as a query language in a typical retrieval system and improves accuracy and speed in classification.

3.5.4.3 Cataloguing System

Catalogue is key to the library, which links user requirements to the documents in the library. Computerized catalogue is most efficient tool in retrieving information about the documents in a library easily and quickly.

Wood (1986) say’s, in manual system all cards had to be drafted, checked, typed proofread, corrected, filed and the filing checked. If any book is moved to a new location, withdrawn or lost, all the cards had to be found corrected. The computer based catalogue needs only one amendment to correct all the entries of the particular file and other various benefits are; additional entries can easily be made, catalogue can be cheaply reproduced, in as many copies as desired and distributed in machine-readable form. Supporting to this, Rowely (1993) say’s the benefits of the automated catalogue system are; a) the catalogue record has become the central bibliographic record for the
library management system as these records can also be used in other functions, b) Interchange of catalogue records has led to greater standardization, c) the availability of union catalogues has facilitated more effective inter library lending, co-operative acquisition policies, cooperative resource sharing, d) no filing or other routine catalogue maintenance is required for catalogues, e) different catalogue formats can be chosen for different catalogue locations, f) extracts from the main catalogue database may be printed or consulted online and g) the cataloguing procedure has become more structured, with a significant proportion of stock being processed. In 1991 Eniya reported that International Institute of Tropical Agriculture has used an integrated library software package for retrospective conversion of the card catalogue. The data conversion reduced 1,70,000 card catalogue entries to only 24,000 automated catalogue records having about 50 fields in each record.

3.5.4.4 Circulation Section

In circulation section, there is a waste of time for repetitive works in the manual system. The use of Information Technology applications like barcode, scanners and its software helps in saving the enormous time and performing the routine operations easily.

Ganpule and Waydande (1994) stated that circulation activity was considered on priority basis for computerization in Indian Institute of Technology Library, Mumbai. And PSG Kumar (1987) also feels that an automated circulation system should perform the functions like; a) provide information on the location of the item on loan, at the bindery, on reserve...b) give details of items on loan to a borrower, c) record of reserves, alerting library staff on return of a reserved item by a borrower and print a book available notice to the one reserved d) print recall notices for items on long term loan, e) renewal of loan, f) alerting library staff about over-due items and printing of over due notices, g) calculations and printing of statistics of various types, h) analysis of summary statistics, i) provision for handling special categories of borrowers and special types of materials, j) printing due date slips; automatically generating orders for lost books and k) provision for inter library loan transactions.

3.5.4.5 Inter Library Loan

Inter library loan is gaining momentum due to present library conditions with improved technological capabilities and network developments. Rowley (1993) feels the computerized inter library loan systems offer the benefits like a) improved inter library loan transaction control and management b) off line preparation and storage messages, c) elimination filing, searching, sorting and preparation of reports, d) reduction of staff time required to process inter library loan requests, e) enter the requests and the
computer can create the forms and keep track of all the details of all records, f) easy to
download and upload Inter library loan records, g) update the Inter library loan records
automatically by entering record numbers. Print download Inter library loan records using
flexible formatting options, and h) maintains data, generate forms and produce various
reports.

3.5.4.6 Serials Control

The ordering, reader service and management service creates a problems and
makes it a complex process requiring a separate control system.

As per Ravichandra rao (1983) an automatic serial control system should
perform the functions like a) ordering: ordering new journals, renewal/discontinuation,
sending reminders and receiving the journals, b) reader service: preparation of a list of
periodical received, preparation of a list of periodicals canceled, preparation of a list of
holding, list of holdings with their status like in shelf, in binding, in circulation etc and c)
management services: keeping track of the amount spent on subscriptions, binding
estimation of budget for the next year, announcement of the missing serials for recording
the same.

3.6 Management Information

A computerized library system provides comprehensive, reliable, relevant, up-to-
date and specific information quickly on various library activities required by the
management for taking effective decisions.

Cortez (1983) defines a management information system as “… an automated
library system with design features to help in the performance of management decision
making. It has dual function to support day-to-day library operations as well as to
provide management with useful information for decision making.” While Wright (1995)
stated that the availability of appropriate statistics and summary report related to a
particular library function, planning, evaluation and justification of the library services
much easier. Computer related system can provide a variety of complex information in
all library operations for many library management decisions.

3.7 Networking and Resource Sharing

Advancement in technology, coupled with the ever-changing needs of users are
using computer networking to new heights, both in terms of capabilities and the
importance of resource sharing efficiently.
Pong (1990) stated that the SILAS (Singapore Integrated Automation Services) has connected with 30 institutions with online access to the database via 116 terminals. The main aim of SILAS is to provide online shared cataloguing facilities to participating libraries. And it can cut down the cost and time-consuming process of creating bibliographic databases.

3.8 Use of Information Technology Application for Library & Information Services

Information Technology applications play a dominant role on information acquiring, processing, organizing and dissemination for the right user. The revolution of technological developments enabled not only to improve the quality of existing services but also to offer a wide range of new services to users.

3.8.1 In-House Database

Library use the applications of Information Technology to create in-house databases for their collections. Computerized databases provide easy and user-friendly access to the information resources and sound foundation for efficient information services. One of the fundamental characteristics of computer-based information retrieval is that the database at the heart of the system may be used as the basis for a plethora of different products ranging from offline database to online database. (Rowley, 1993)

3.8.2 Online Public Access Catalogue

The computerized on-line catalogue is popularly known as On-line Public Access Catalogue. It is a computerized database of the library holdings, which can search many powerful ways than manual card catalogue. OPAC can be searched locally, online and through networks.

Rowley (1993) explains that OPAC supports more sophisticated searching and allow consultation of issued record as well as on-order items. Its feature include combined searches using Boolean operators and nested terms, field searches, range searches, relational searches, hyper searches, qualifying searches, group search, storable and reusable search strategies and search results. It also offers powerful sorting capabilities and printing options. Other features include number of ways of displaying search results, access from remote locations, searches statistics, generation of hard-copy catalogues, and creation of catalogue on CD-ROM.
3.8.3 CD-ROM Search Service

Optical discs have become increasingly important as a medium for the storage and dissemination of information during the early 1990's. Optical discs represent alternative means of accessing information to online commercial databases.

O'Leary (1990) stated that using CD-ROM databases at the point of use or in the library was found to have considerable effect on budget in a number of academic institutions and also CD-ROM is virtually replacing online searching. Supporting to this opinion Biddiscombe (1991) stated that the networking of CD-ROM's is now being run successfully in a number of academic institutions. And Smith (1993) reported that 82% of academic institutions used CD-ROM's and all respondents generally agreed that CD-ROM searching was far more relaxing and far more fun than online searching.

3.8.4 Electronic Journals

Electronic journals have the potential to revolutionize access. Given an appropriate infrastructure, journals, articles can be delivered directly to a screen on every scholar's desk when required, with little delay.

Taranum (2001) discussed on free electronic scholarly journals, he say's from the early 90's the pool of free scholarly electronic journals has increased considerably. Electronic journals in scholarly setting continue a tradition of creation and dissemination of knowledge that has begun long ago on print journals; the attitude and publishing habits of researches have changed. Amidst the future of serial price increase, the steady growth of scholarly journals freely availability in electronic form is worth noticing.

3.8.5 Network

Network is expanding at a speed day to day that results in 'information revolution'. The latest developments in the field of computer networks and telecommunications technology have pointed the way to an automated information society through local, regional national and international communication networks by which one can provide better information services to the users. Computer networks like LAN, WAN, INTERNET, CD-ROM, MULTIMEDIA, ELECTRONIC publication are some of the tool of Information Technology by which Information can be disseminated and made readily available for the user.

Library networks offer many potential and new capabilities for sharing information among different library and information centers at local, regional, national and international levels and eliminate the size, distance and language barriers among users.
through resource sharing. As per Selvi (2000) following are some of the information services which can be provided through library networks; online public access catalogue, online circulation transaction, current awareness services, selective dissemination of information, CD-ROM network services, e-mail services, bulletin board services, indexing & abstracting services, content page service, internet services and others.

Vijayakumar (2002) explained on Virtual Private Network (VPN), how to establish it? How the virtual private network works, how to access the VPN, security of the VPN and various benefits of VPN for the library like; a) global accessibility to the library resources, b) connectivity for telecommuters, mobile library and information centre users c) e-mail via POP3 d) Web based management e) extend the workplace beyond the office walls allowing employees to be fully productive at home and the road.

3.8.6 Digital Library

Terms digital library, is the library of the future and electronic library conjure up images of networked collection of historical, cultural, and knowledge related artifacts in various electronic formats. Digital library would be of little value or interest if people did not use them routinely or effectively. However, researchers have not yet produced behavioral theories for understanding how materials are produced and selected for digital libraries and how diverse people actually choose and use the materials that they find in them. (Lisa Covi and Rob Kling, 1996)

Faulhaber (1996) has discussed that, how the digital libraries can be used for the distance learning. And he says' distance learning and digital libraries are two sides of a single coin. He also discussed the various technology required for digital library in helping the process of distance learning.

3.8.7 Management

Selecting automated library systems is a complex and often difficult process that most library administration has to go through, and different libraries usually take different approaches. Zhang (1998) identified several factors that influence the library administrator decision-making process regarding library automation.

3.8.8 Internet services

Today Internet is used by over five million users in more than hundred countries to exchange and access the information. The use may be varied from personnel to official/business. All though the Internet has its root in academic and research Institutions, much of the new traffic on the internet is commercial; with organizations
connecting to the Internet to take advantage of the wide range of capabilities that it provides both individual employees and business functions.

According to Rajashekhar (1998), the librarian can provide the library through the Intranet and Internet may include catalogue databases, current awareness services, bulletins, externally purchased databases, remote information services, internal newsletter, reports, journals, and Internet Information sources.

Vijayakumar, Sridhar and Santhosh kumar (1999) have discussed the wide and varied services of Internet like; e-mail, telnet/Remote login, FTP, Bulletin board services, navigation tools and others. Further Kannappanavar, Vijayakumar, and Swamy (2002) also highlighted how Internet can be used for providing the various library services like; online public access catalogue, current awareness bulletins, vendor based databases, remote information services, internal publications, Internet information sources – linking, Internet information sources – listing and others.

3.9 Impact of Information Technology Application on Library Staff

Human resources are key to the successful use of many technologies in a library. The greatest challenge faced in the deployment of Information Technology is the development of skilled human resources. Staff who can support and comply with the computer and network environment is essential for effective Information Technology implementation. Positive attitudes and actions of staff involved in IT use are regarded as crucial for the successful implementation of a new system.

3.9.1 General

The attitudes of library staff members towards a proposed automation project fall into fairly distinct categories. Fortunately, for the sake of progress towards automating libraries, the great majority of staff members are open minded, reasonable and enthusiastic people who show a genuine interest in learning more and being included in training and orientations. A second group exhibits attitudes ranging from indifferences to hostility. Some of these employees, driven by a fear or a strong preference for the status are truly resistant to automation. They may have irrational fear of technology (Walton, 1982).

Luquire (1983) states that while dealing with new technology, there should be a balance between human considerations and the technology of library automation and better understanding of the complexities of the perceptions and attitudes of people is mandatory. Kiesler et. Al., (1987) found that there was even segregation between those who worked on the automation project and those who did not. In relating to
Kielsr et. al., (1987) statement Prince and Burton (1998) found that the senior academic related staffs were largely disinterested in technology, the more recently qualified staff being more positive adopters of innovation. As per the survey of Jones (1999) Out of 118 respondents, thirty-nine people found positive terms of excitement, enjoyment, pleasure, and competency. Twenty-two respondents checked only negative terms like frustration, inadequacy, dislike, irritation and intolerance. Fifty-seven respondents found a mixture of positive and negatives.

3.9.2 Training

In a recent study of special libraries, the greatest source of techno stress was found to be inadequate or non-existent training on in-house systems [Bichteler, 1986]

Sievert et. Al., (1988) observed that resistance may decline with familiarity and experience with automated technology. So training is useful solution, but it is important that the people are given a chance to proactive what they learnt. Yacoob and Harun (1996) feel that it was not unusual for some staff to find difficulty in adapting to new systems. There should be retraining of staff and additional staff support in routine jobs and the new skills of computer related jobs

3.9.3 Staff Involvement

Jones (1989) reported that "the feeling of satisfaction increases as the percentage of involvement increases and showed a decrease in satisfaction as staff involvement decreased. Statham and Bravo (1990) suggested that, there should be careful planning and continued feedback from the library staff while introducing the new Information Technology application to the library. In addition to this Daniels (1995) stated that, as non-professionals use new computerized system on a day-to-day basis. They have the power to make it a success or failure. There fore it is advisable to involve them as much as possible in the planning stages and inform them as much as feasible of all major decisions that affect their jobs and working environment.

3.9.4 Staff Reduction

AS per Johnson (1991) observed that a number of automated libraries show the reduction in the number of that non-professional staff by the implementation of a new system. Nearly half (48.2%) of the participants reported a decrease in the number of non-professional/clerical positions as the direct result of automation. Supporting to this Jones (1999) says that a large majority of the total respondents report reductions of personnel in all categories like support staff, librarians and student workers. There was a definite decrease in the number of support staff and student workers.
3.9.5 Job Structure, Design and Content

Horny (1987) stated that automated systems frequently bring opportunity for redesigning the way in which people work as well as in the structure of the whole organization. Certain jobs may no longer be significant. Others may combine or become interdependent, due to the way in which functions interrelate with in the system.

Furuta (1990) stated that the introduction of bibliographic utilities in the 1970’s produced far-reaching changes in cataloguing departments by allowing the bulk of the material to be processed more quickly and cost effectively by non-professionals. In turn that the change caused professionals duties to shift to handle the more difficult items.

Dyer, Fossey and Mekee (1993) stated that technology could have a profound effect on job design and quality of working life. The introduction of an automated library system brings changes in the working environment, in the nature of work, job content, in job autonomy, methods of control in skill requirements, responsibility, status, career paths, in patterns of relationships, work groups and communications.

3.9.6 Increase in Work Load

Daniels (1995) opines that most of the work can be concerned with record conversion, input of data and bar coding the material. The potential that computerized system have for providing a much-improved service has meant that workload has increased in two ways. Firstly the very effectiveness of them, and the fact that they enable staff to do so much more, has led to the creation of more work. Extra work may also arise from tasks such as back up and maintenance – these can sometimes take up more staff time than is originally estimated. In supporting to this Jones (1999) found that more than half of the total respondents replied that technology increased their workload. The percentages of staff in each library that believed technology has added more responsibilities to their job are even higher.

3.9.7 Job Satisfaction

Sykes (1986) discovered that library assistants in one academic library gained satisfaction either from contact with the users or from doing the job efficiently led him to conclude that for those who get their satisfaction from the latter, automation increases job satisfaction. According to Craghill, Wilson and Neale (1989), automation can lead to increased variety, challenge and opportunities for learning and development, especially when the system is being implemented. It can also bring an increased sense of achievement and feeling of usefulness. They asserted that job satisfaction is increased in many cases “mainly by increasing the efficiency and effectiveness with which staff are able to do their jobs”. Daniels (1995) stated that non-professional staff in UK College
seemed fairly comfortable with the new systems to use for the basic functions. Their increased job satisfaction demonstrated better and more efficient services to the users and enhancement of overall image of library. They were impressed by the way it had doubled speed, efficiency, accuracy as well as access to materials.

3.9.8 Problems and Solutions

The use of Information Technology applications continues to become increasingly common place in libraries in the new millennium, as it has made possible many exciting new opportunities in managing and using library. Along with impressive achievements in streamlining library operations and improving library services, Information Technology has produced a new set of intellectual, psychological, physical and social barriers to effective library development.

Brod (1984) stated that the main symptoms of stress are many and varied – as many as separate problems have been identified as stress-related. These can be both short and long term and range from indigestion and irritability to hypertension and heart disease. Technostress is one particular kind of stress that workers can experience.

Dainoff (1986) observed that many problems have been alleviated by improved design of workstations. In order to accommodate a great variety of individual shapes and sizes, the workstations must be flexible and just take into account the integration of chair, terminal and work surface. A second focus of ergonomics in libraries has been the reduction of eyestrain and glare resulting from VDT use. These problems can be minimized by a number of techniques such as relocation of the VDT, installing light barriers, filters and using colored screens.

Roose (1986) stated that some of the earliest manifestation of technostress in our society was health problems related to the use of terminals, evident since the early 1970's. Through the years, agronomists have investigated visual and musculoskeletal problems, job stress factors, working conditions and psychological states of VDT operators.

Dyekman (1992) suggested cross training and diversification of both activity and responsibility as ways to avoid physical problems. Ergonomic workstations with comfortable chairs, wrist rests and glare controls are also important.

According to Daniels (1995), the common physical complaints of VDT workers include hand cramps, pain in the neck and shoulders, back pains, asthenopia, headaches, and general fatigue. These symptoms in some part can be avoided by taking
simple precautions, workers should ensure they maintain the correct seated posture at a workstation.

3.10 Impact of Information Technology application on Users

The major reason for using Information Technology applications should be that it would ultimately benefit the end user by improving the range and quality of user and support services. One of the major significant challenges facing academic libraries during times of dynamic technology is the ability to understand the changing needs and perspectives of their users. Libraries are more concerned to help users in coping with changing technologies as their potential has significant impact on teaching education and research activities of research community.

Pease and Gouke (1982) reported that after the introductions of the on-line catalogue there is an increase in the use of library catalogue and collections. Moreover, users consulted the on-line catalogue frequently, found relevant materials in their searches, were satisfied with search results and said online catalogue is easy to use without formal instructions.

Bichteler (1987) stated that most users preferred online assistance, as they frequently wish to begin searching immediately without taking the time to read instructions or they may be accessing the catalogue from remote locations.

Lipetz and Paulson (1987) surveyed users once before and twice after the introduction of an on-line subject catalogue to measure its impact on user habits in New York State Library. They found that after the online catalogue was introduced, the volume of catalogue use and the proportion of subject searches were increased.

Klobas (1990) stated that users could be useful allies when a new technology is proposed. Indeed. Some users push the library to introduce new Information Technology applications.

As per the survey of Adams and Bonk (1995), lack of knowledge about electronic resources was the most commonly cited obstacle to use of computer based information resources by faculty. Another study conducted by Abels, Liebscher and Denman (1996) found that the accessibility/ connectivity plays a major role in the use of networked information by faculty at smaller academic institutions. And Martinez-Arellnnao (1996) study showed that after introducing an on-line catalogue in a library, the frequency of library visits was increased, the number of catalogue users was greater and that opinion
about library services was better, use of the catalogue was easier and users found more information on library holdings.

As per the study of Starkweather and Wallin (1999) most of the participants replied that the library’s computer based information resources affected the way they conducted research. They saved time when searching electronic periodical indexes, they had increased confidence in their review of the literature by using electronic resources and they could identify resources in remote libraries and archives.

3.11 Trends in Information Technology Applications in Libraries: Global Scenario

3.11.1 Use of Information Technology Application

Woods (1986) Summarized the responses to a letter of enquiry sent to all British university libraries in 1984. He described the history current position, and future plans with respect to automation in the UK university libraries. He covered acquisitions, cataloguing, circulation control, serials as well as networking.

Sippings (1987) surveyed the use of technologies and found that 80% of those surveyed were using some sort of computer and 95% of these were using business packages such as word processing or spreadsheets on them.

Lin (1988) reviewed the development of computerized library services in the Chinese People’s Republic. He discussed the important role of the National Library of China and recent developments in computerized acquisitions, cataloguing, circulation control, union catalogues of periodicals, and on-line cataloguing.

Hein (1989) traced the beginnings of library automation in Denmark. The common database for local authority systems now called BASIS is used by 110 library systems. The interest in library automation is increasing rapidly and there are a number of experiments in the field.

Pong (1990) traced the development of computerization of library operations in Singapore from 1970 – 1989. Although the initial interest of Singapore libraries in the application of computers can be traced back to the 1960’s, serious considerations to computerize library operations were only taken in the 1970’s. He concluded that with Government emphasis on computerization, computers and related technologies are becoming increasingly important and are likely to dominate the library scene of Singapore in future.
Brimsek (1990) reported the survey results with a response rate of 38.4%. He identifies that, word processing was cited most often (88.7%), followed by online searching (87.3%), fax (72.8%) and telecommunications software (70.3%). The application of technologies was perceived by 88.9% to increase the level of services provided, 75.9% greater level of user satisfaction, and 86.4% indicated an increased level of job satisfaction due to new technologies.

Younis (1990) traced the historical development and the factors affecting the library movement in Jordan. He studied the use of computer applications in 333 libraries in Jordan. The problems that obstruct the use of computers are the lack of trained staff, funds, physical facilities, software, user’s indifference and administrative factors. Recommends solutions to improve libraries to adopt new computer technologies to improve their functions and services to users.

Eniya (1991) reviewed the state of the art of computerization in Nigerian libraries. Computerization of library services is intended to ensure accuracy, efficiency, effective information management, reliable user services, enhanced inter library co-operation and library prestige. Till 1985, libraries are mostly at the trial stage. University and research libraries and the National library of Nigeria are leading the race to computerize their services.


Walckiers (1992) presented an overview of library automation in Europe. He has discussed about computerized library functions, integrated library systems, local area networks, wide area networks, union catalogues, national bibliographies, standards of bibliographic records, subject heading and classifications, CD-ROMs and online bibliographic databases, pilot projects, book preservations and the impact of technological change on libraries.

Keefer and Jimenes (1992) reviewed automation efforts in Spain from 1960, which have increased in the past five years, coinciding with the introduction of new software packages. The pace of automation and the software solution chosen vary according to the different types of libraries. Some networking and cooperative ventures have begun recently, especially among university and research libraries.
Larsen (1992) found that more than 1300 large integrated library systems are installed in the EC member countries. This figure represents a growth rate of more than 525 percent over the last 5 years. The number of suppliers of large integrated systems has increased from 12 in 1986 to more than 30. More than 3600 small-integrated systems have been installed by some 40 different suppliers are shown in a study carried out in 1991.

Hauptman and Anderson (1994) surveyed 800 different types of American libraries and reported that, large academic and research libraries are now almost entirely dependent on technology, but even small special and public libraries can hardly function without computers, modems, CD-ROM, fax machines and other equipment. Results indicated that only one third of respondents have online public access catalogues (OPAC) or use electronic mail and less than 50% have access to CD-ROM’s. Concluded that, as money tightens through out the 90's, libraries are to seek out new technologies as a means of delivering quality information services at a reasonable cost.

Hossein Farajpahlou (1994) surveyed 42 Iranian academic libraries and observed that computerization of library services started in the late 1970's revealed a growing trend. Out of 21 responded libraries, nine libraries were already using computers, seven were installing computers, five reported that they would have computers in next year and the remaining eight were planning to buy and install computers in the future. Though, there are locally developed and commercial softwares, CDS/ISIS software is playing a major role in computerized library services in Iran.

Sung (1994) reviewed the development of library automation and networking in Taiwan which began in the 1970's. Computerized catalogues and union periodical lists were produced and online reference databases and online shared cataloguing were made possible by the advent of digital communications network, including Taiwan Academic Network.

Macevieveiene and Tolusis (1995) provide the account of library automation in the 15 Lithuanian academic libraries. The first attempt of library automation in Lithuania was made in the 1980’s. However, it is only during the last 2 - 4 years that the results of these technological revolutions in library automation became visible. The major development in academic library automation is specifically related to the integrated systems embracing essential functions of a library. Half of the Lithuanian academic libraries have CD-ROM of library collection building. The insufficient knowledge of the
library staff on the usage of modern information technologies and the poor financial situation of parent institution are some of the problems faced by the libraries.

Madder (1995) briefly reviewed the developments of library automation in Hungary with particular reference to the large search and university libraries. Sets out the plan for library automation in Hungary includes: details at the organizational level, hardware supply, network developments and the outline of a library automation strategy for Hungary.

Burhman (1996) reported the results of a mail survey of seventy research libraries in six Central and Eastern European countries. Results showed that these libraries are acquiring automated processing systems, CD-ROM databases, and connections to computer networks at a rapid rate and that automation activity has increased substantially since 1989. Access is the reason to automate, which appears to mean placing the catalogue online with better search capabilities and putting items on the shelves faster. Co-operation and standards are highly ranked automation goals.

Furnace and Graham (1996) surveyed the use of Information Technology application in 170 special libraries in 1994 in UK. They found that 95% of the libraries surveyed are used computerization for some aspect of their operations and services. The library catalogue proved to be the most popular area for automation with 80% of the respondents having an online public access catalogue followed by acquisition (50%), serials control (46%) with automation of circulation and interlibrary loan systems is 43% and 30% respectively. 71% of the organizations surveyed subscribe to commercial online services. 62% purchase CD-ROM databases and 46% use internal databases.

Malik (1996) reviewed the status of library software and library automation in Pakistan. Library automation was started in 1980’s and number of libraries was computerized during or after 1987. He has discussed about various library software packages and the role-played by the library schools and professional associations in imparting training on library automation in Pakistan. He revealed that the libraries face the problems of inadequate funds, lack of standard software package, proper training etc.

Li (1997) stated that library automation in Taiwan began in the 1970’s and has been marked by an impressive array of achievements since the 1980’s. In 1988 thirteen universities and colleges in Taiwan have automated library systems. By 1992, the number been increased to twenty-three. In 1994, there were forty six institutions with
library-automated systems, a 254 percent jump in six years. As a developing country, Taiwan's achievement in the library automation has been remarkable.

Siddiqui (1997) reports the survey on seven academic libraries in Saudi Arabia regarding the use of Information Technology in their libraries. He says' majority of the academic libraries have automated the library activities like; Online public access cataloged, cataloguing, acquisitions, periodicals control, circulation, reference and Arabic online public access catalogue. And they also have the access of GULFNET, KACSTNET, CD-NET, e-mail and bulletin board services.


Uddin, Chowdhury and Islam (2003) conducted a survey on Automation scenario of some leading agricultural libraries of Bangladesh. They reports that a few library and information centers of agricultural universities have facilities like CD-ROM, Fax, e-mail and Internet. Automation status includes database packages. CD-ROM databases etc, telecommunication facilities such as phone, fax, and e-mail, internet services provided by library and information centers in the country. The main constraints in development of library automation in agricultural libraries of Bangladesh are incompatible data format, inadequate skilled manpower for developing technology based information, insufficient budget for library and information centre, absence of advanced training facilities for professional, inefficient need assessment of each client, and others.

3.11.2 Cataloguing
Barnholdt (1992) stated that in 1988 it was decided to establish a microcomputer based cataloguing, information storage and retrieval systems to provide the universities/ institutes and departmental libraries with a local cataloguing and search tool. This move increases cooperation, avoids unnecessary duplication of titles and enhances the ALIS databases contents.
3.11.3 Networking

Burhman (1996) reported the results of a mail survey of seventy research libraries in six Central and Eastern European countries. He reports that connections to computer networks and CD-ROM databases are at a rapid rate. Fast and easy access is the reason to do this, which appears to mean placing the catalogue online with better search capabilities and putting items on the shelves faster. Co-operation and standards are the highly ranked automation goals.

3.11.4 Management

Zhang (1998) conducted a study on management perspective in the selection of library automation systems. In this study he finds, the most significant attitude changes between librarians with automated systems already in their libraries and those with out automation occurred in the areas of system cost and vendor selection. Administrators from libraries with out automation considered the system cost be the dominant factor, while librarians with automated systems operating in their libraries had learnt from their experience and put much more emphasis on performance, and were more to search for the computer system that would best meet their needs.

3.11.5 Impact on Library

Cckrili (1997) discussed the issues of 23 qualitative interviews conducted at a random sample of UK and German university libraries. Issues discussed include: impact of economic recession on university funding, rapid growth of IT in all areas of academic life and its impact on libraries, online access to external databases. In UK, the fundamental changes in the higher education system have led to a substantial increase in demand on university libraries but with out increase in finance. Similarly, in Germany, the most prominent issues have been the massive increase in student's number and the changes in Information Technology, networking and automation.

3.11.6 Training

Antonio Balby (1994) reported the practices followed by Brazilian Library schools in training librarians in undergraduate, extension, specialization and graduate programs to use computers. They sent a questionnaire asking about computer training was mailed to country's thirty three library schools. Answers came from thirteen institutions, which represent 39.3%. Among the thirteen schools surveyed, a total of thirty nine courses on computers were taught to librarians in 1990, twenty eight courses were offered at undergraduate levels, five at specialization levels, two at extension levels, and four at graduate levels.
Awobgami (1995) conducted a study on staff opinion on library automation planning in Nigerian university libraries. They used questionnaire method to elicit the staff opinion, 51 respondents representing 79.7% of the population under study returned their completed questionnaire. He reports that reaction to automation in general remained quite stable and relatively positive. And he suggest that automation should not be made a secret or handled singly by the university libraries but each professional member must be involved.

Olorunsola (1997) discuss the staff training aspects of automation in Nigerian university library. He discusses the structure and organization of on-site training of staff in the user of TINLIB software at the University of library. Particular attention is paid to the content of the training, trainers and what the programme is out to achieve. The study also covers the pitfalls in the training exercise and offers suggestions for future training programmes.

3.11.7 Library Staff

Hyter and Heery (1989) stated that Information Technology has made forceful impact on academic libraries. Many services provided for library users have benefited from the use of computers. The survey shows that the majority (86%) of senior staff in UK academic libraries now makes at least some use of Information Technology in their day-to-day work. 72% in this group of library staff use some kind of network. The most popular use of Information Technology application among 68% senior library staff is for word processing followed by e-mail with 60%.

Hong Xu (1995) conducted a study to trace the impact of automation on job requirements and qualifications of cataloguer and reference librarians in academic libraries by comparing and analyzing job advertisements from important library automation development description. He concludes that with the development of automation in libraries, the requirement of previous work experience for catalogers and reference librarians have become more similar, increasing needs for computer skills can be found in both group and shortage of catalogers and greater demand for reference librarians have led to more entry level positions being posted in both groups.

The study of Idowu (1999) highlights certain vital variable that can affect attitudes of librarians. He has discussed the relationship between knowledge, training/experience on the use of computers and their attitudes towards the computer. For this study 187 librarians were participated. The results indicated that there are significant relationships between these variable and attitudes towards the computer. This means previous
training experience and present usage (knowledge of computer usage) of computers at work influence a positive attitude towards the computer.

Jones (1999) Conducted a survey concerning university library support staff perceptions and options about technological change was conducted in 1998 and the results are compared to the results of a similar survey administered to the same population in 1988. He reports that the perception of technology always makes work easier, faster, or more accurate seems to have diminished between 1988 and 1998. The percentage of respondents who feel that the technology makes their work harder has increased from 9% to 24% during the last ten years. However, 57% of respondents do not believe technology is responsible for most of the personnel changes.

3.11.8 Library User

Adams and Bonk (1995) distributed a questionnaire to teaching faculty, selected administrator and professional personnel, and clinical faculty, getting the finals responses of 27%. Further he reports that, the electronic resource present used by the largest percentage of faculty report accessing the online catalogue. Most faculty has reported that they access the online catalogue on a weekly or monthly basis.

Chalkley and Nicholas (1997) conducted a research based on survey methods involving self-assessment, self-reporting by teachers and Observational research has taken place on 11 teachers and 253 pupils in different classes held in three London primary schools to know the use of Information Technology. It is generally agreed that the computers are only used for a small percentage of time. Significant difference in use were observed between those class rooms where children were free to choose their own activities and those where activities are teacher directed. These differences may show that computer technology is being used only when it does not require a change of teaching style or classroom organization. Difference was found between the youngest boys and girls in how much time they spent using computers.

3.12 Trends in Information Technology Applications in Libraries: Indian Scenario

Computerization had its beginning in India when punched cards were used during late 1950’s and early 1960’s for some applications in the insurance sector and census operation. IT started with the installation of the first computer at the Indian Statistical Institute, Calcutta in 1995. INSDOC was the first in experimenting with computers in Information processing work in 1964 using IBM 1620 Model II available at Delhi School of Economics for processing data pertaining to Roster of Indian Translators and for production of author and subject indexes for Indian Science Abstracts. During 1970’s
DRTC, Bangalore, BARC, TIFR, Mumbai, IIT, Madras, and BHEL (R&D), Hyderabad are some of the other organizations where computers have been used for production of information products & services (Rajan and Satyanarayana, 1987).

PSG Kumar (1987) conducted a survey on 37 institutions on different 82 computer based library operations. Out of 37 institutions only 21 intuitions has one operation. Six of them have computerized two operations; nine of them have three to eight library operations. RRC, TIFR and BARC have not only taken the lead in introducing computerization at the earliest, but have also tried to evolve a comprehensive computerized system.

Vyasamoorthy (1989) reported the developments and advantages of computers and area for application automation in India and abroad. In India, all such work has started with special libraries. In India there are about 50 organizations involved in the use of computers library work.

Laxman Rao (1993) Studied planning and implementation of automated circulation system for Osmania University library system and indicated various benefits of automated circulation system.

Konnur and Rajendra (1994) discussed the application and advantages of computers in library work and information services provided to users and the problems faced in Poona University library.

R P Kumar (1994) surveyed the usage of modern technologies in different types of 300 libraries in India. He observed that some of the libraries have automated their routines while majority of them are still in the planning stages. He examined the impact of modern technologies on libraries.

As per the survey conducted by Biradar S K (1995) on 339 libraries, 64 % have personal computers, 16% have local area network, 46% have library automation packages, 23% have CD-ROM drive, 2% have CD-NET, 11% have online facility, 45% have micro fiche readers/printers and 23% of them are members of a library network. Further, it was found that, Out of 156 universities, 72 universities have responded and 60% have library automation packages, 17% have CD-RO drives, 3% have CD-Net, 1% have online facility, 42% have microfiche reader and printers and 64% of them are members of library networks and subscribe to 34 CD-ROM databases.
Mukesh Saikia (1997) briefly discussed the application of Information Technology in Tezpur University library. He has described the hardware and software procured for library automation and the creation of database of library holdings using CDS/ISIS. The problems of Northeast in having e-mail, due to insufficient nodes of national networks like SIRNET, I-Net, ERNET, etc are also discussed.

Ravichandra Rao (1997) discussed the status, problems and the future of automation in academic libraries in India. He stated that automation activities in academic libraries slowly picked up with the support from INFLIBNET, UGC, NISSAT and other similar agencies combined with increased awareness of Information Technology applications among librarians. In beginning they use the IT like e-mail, CD-ROM, LAN, Machine-readable catalogue, etc for sharing their resources.

Ansari (1998) reviewed the computerization activities in 14 universities of Bihar and found that 4 have received financial assistance from INFLIBNET for computerization of their libraries. He has discussed certain problems and offered a few suggestions for improvement of computerisation process in university libraries of Bihar.

Chaya Devi (1998) has conducted a survey by interviewing the three university librarians viz Andhra University Library, Osmania University Library and Sri Venkateswara University Library of Andhra Pradesh to assess the computerized services offered by them. She found that the impact of Information Technology is not yet felt much in these libraries. Though, these libraries have certain hardware and software facilities, the proper services are not reaching the academic community to the expected extent. She provided a few suggestions for improving the computerized information services to users.

Vivekanand Jain (1998) stated that Banaras Hindu University has a computer center with campus LAN and ERNET facilities. He provided the hardware and software facilities of Banaras Hindu University and describes the developments due to INFLIBNET programme in the university. He felt that due to large size of database, BHU requires a huge amount of money, trained manpower and proper planning for automation.

Maheshwarappa and Tadasad (1999) reports the extent of availability and use of computer, based on the data collected through questionnaire from 571 out of 931 college libraries in Karnataka state. Only 121 colleges have computers, of which only 45 colleges are using computers for library activities. Only 14 of 45 college libraries are using the computer readable databases.
Lakshmana Moorthy (2000) carried out a survey to assess the impact of electronic media on 344 library and information centers of scientific, research, and developed institutions and universities in India and received 153 (44.5%) responses. He has covered infrastructure, computers, operating systems, library automation software's, database development, networks, databases, digital libraries and impact of electronic media on library systems.

Kannappanavar and Vijayakumar (2001) surveyed the use of Information Technology facilities, in-house database, access to networks, library services and barriers to Information Technology applications in two agricultural university libraries in Karnataka. They found that none of the agricultural university library is having databases and full implementation of Information Technology applications.

Suryanath and Garg (2002) conducted a study on impact of Information Technology on biomedical information centre of India with a response rate of 37.61% (126/335). They reported that, computer facility increased from 38.10% to 57.14%, communication from 55.56% to 84.13%, networking from 37% to 54.76%, database services from 40.48% to 66.67% and CD-ROM services from 13.49% to 19.05%. However, it is restricted to bigger cities and bigger information centers and libraries.

Vyas (2003) conducted a survey on 12 state university libraries as well as deemed university libraries of Rajasthan. Out of ten, six respondents have reported that they received financial support for library automation from INFLIBNET. All academic libraries have window based operation systems however BITS Pilani has UNIX system with Linux. And most of the libraries are prepared in-house database for their books and back volumes. Six university libraries of Rajasthan use SOUL application software for cataloguing. But acquisition, serials and circulation modules are still in experimental stage.

3.12.1 Library Staff

Vijayakumar (1995) conducted a research to study professional attitude towards library computerization in university and special libraries in Andrapradesh.

Batthini and Madhani (2003) conducted web search behaviour of 16 selected libraries of Ahmedabad and Gandhinagar conducted through a survey. It reveals that 50% of library staff use boolean operators and 37.50% use all key words for query formulations.
3.12.2 Library Users

Mukherjee and Chopra (2000) conducted a study on the user reaction to the use of Information Technology in library services. The study was based on the user profile maintained by the RD University library, Jabalpur covering the period from January 1997 to August 1999. They concluded that the university library should try to make sincere and serious efforts to educate its users towards utilizing Information Technology services. And the faculty members should play an active role in motivating their students and research scholars for availing of the existing Information Technology services of the university library. The combined efforts of the library faculty may yield better services in getting the best out of Information Technology application facilities.

Chandran and Ramesh Babu (1999) conducted an opinion survey to study the attitude of staff members towards use of Information Technology in 16 academic libraries. They found that the library staff has good interest in automation of library services and expressed greater appreciation for new technology as it can help in providing better services to their patrons. They also found that sufficient funds is the major reason for poor state of Information Technology application in libraries followed by the lack of support by administrative authorities and lack of trained staff.

Varalakshmi (2003) has examined the use and perceived importance of the internet amongst academics in university environment. A detailed questionnaire was distributed among the faculty members of Andhra University. The findings revealed that the primary purpose of using the Internet for research is a) consulting e-journals b) downloading softwares and c) use of search engines like yahoo and google.

3.12.3 Networking & Resource Sharing

Sujatha (1996) carried out a study on resource sharing and networking of university libraries in Andhra Pradesh. She suggested the networking of University libraries to promote the sharing of resources as there is a large scale duplication serials and books in these libraries.

Patil (2000) has discussed about the infrastructure required for the establishment of fiber optic network to University of Pune and he reports the fiber network was established within 400 acres of area of University, jointly with C-DAC, IUCAA and University of Pune with a cost of over 35 lakhs in 1994. The annual cost of subscription is also shared by these three organizations. This network is based on Fiber Distributed data interface, star topology technology which is the most modern and sophisticated technology and fastest in data transfer. To this basic infrastructure, all the university departments including the library, university offices are connected with an additional
investment of Rs. 41 lakhs. Further annual financial provisions are made for use and maintenance.

Vatnal and Ramesh (2000) have traced the lines of development of computer networking activities in Karnataka universities. The COPSAT facility encourages the large-scale demand for database search by accessing the facilities provided by NCSI and INFLIBNET. Their library developed the campus network by laying the optical fiber across the campus which gave a new dimension to the networked environment in the campus.

Ganeshan and Srinivasulu (2002) have discussed how the University of Hyderabad library provides network based information services for their users. The services include online access to database over local area network, access to full text online journals for more than 2500 reputed journals, Internet services, e-mail, alert services for content pages of journals and bibliography frequently, CD-ROM search services for full text articles, multimedia and CD’s which come along with books and others.

3.12.4 Database
Rama Reddy (1997) has discussed the management of data correction of books database for the data entered during retrospective conversion operation and regular cataloguing function using a different format other than LIBSYS. He has briefly described the books database of the University of Hyderabad.

3.12.5 CD-ROM
Kaur (1997) reports the survey of the libraries of agricultural universities and research institutes in the states of Punjab, Haryana and Himachala Pradesh to study the use of CD-ROM and their impact on library and information services. He observed that out of 7 libraries 3 libraries have installed the CD-ROM for their computers, 5 libraries have in-house database for books and periodicals, 3 libraries have database on CD-ROM disks.

3.12.6 Internet
Chandran (2000) conducted a survey on use of Internet sources and services in SV University (Tirupathi) environment. The survey reveals that, the 22.22% of the respondents have access to the information through commercial online services and about three fourth of the respondents are satisfied with Internet services.
Biradar, Vijayakumar and Anil Kumar (2001) conducted a study to identify the awareness and use of Internet based information resources among the scientists of Indian Institute of Science, Bangalore. The results report that cent percent of the respondents use the Internet to meet their information needs. There is no significant difference in the level of usefulness of information available on Internet. Great majority (83.33%) of users opined information available on Internet is useful and only 11.66% scientist said it is partially useful. Study also traced out the extent of difficulties in searching information through Internet. Once again large (75%) number of users felt absolutely no problem in searching the information through Internet.

3.12.7 Library Home Page:

Chandra (2002) has discussed how central library of Indian Institute of Technology, Chennai provides the various Web based services through their library website, document delivery services, access to e-journals and e-books, ask the librarian, help?, virtual reference desk, new additions, journals of the month, digital suggestions box, electronic reference sources, patents information and what’s new. To avail these services, the user should visit the URL http://www.cenlib.iitm.ac.in

Koganuramath and Angadi (2002) have discussed the necessity of the library home page for the Tata Institute of Social Science library and they have listed the content of their web page. It includes what’s new, services, borrowing Instructions, renewal of loans, Interlibrary lending, Information retrieval, document delivery services, user education, service price list, collections, databases, contact address information, opening hours, staff and how to get into the library and others.

3.12.8 Services

Jagajeevan and Katna (1998) reports how the selective dissemination of services is provided at Indian Institute of Technology, Kharagpur. The report reveals that, Electronic SDI was introduced in 1997. Based on the currents on Diskette database on three of the major thrust areas like a) physics, chemistry, earth science b) engineering, computing and technology and c) social, behavioral and earth science. And they have described the methodology adopted in the library. The problems faced and the future prospects are also mentioned. Besides opening new vistas for development of the expert databases of faculty interest profiles.

Mohapatra (2000) has discussed the current developments in electronic library services at the Indian Institute of Technology, Kharagpur. He describes the methodology adopted in providing the various electronic services like video library services, database services (both internal and commercial database), selective
dissemination of information, online journal access services, and retrospective database search services etc.

3.12.9 Electronic Security

Jadhav and Kukarn (2003) conducted a study on electronic security system at Indian Institute of Technology, Mumbai. The library felt closed circuit television and video cameras are suitable for security system. So they adopted 3M Electronic security system to safeguard the physical materials of the library. They installed the Electromagnetic gate at the entrances of the library. The gate has sensors for magnetic strip inserted in each book of the library. Any unauthorized exit of library material produce to alert, the library staff. Sensitizer/de-sensitizer unit, 3M -995 work station desensitizes each book that is issued out and re-sensitizes each book that is returned to the library.

3.12.10 Literature review

Rashid (1996) presented a literature review of significant developments in library automation. He has discussed the development of library management systems, the advantages of integrated systems and the role of office automation systems in libraries. He has outlined the recent developments in information retrieval systems, online public access catalogues, CD-ROM and networking.

Summing up

The reason behind the review of the literature is to review the developments of wide and varied Information Technology applications in the various library and information centers, its impact on various aspects of libraries and information centers and also to know its use and impact on library professionals and users. The main objective of this review of the literature is to identify the gap where further research can be conducted. From the review of literature it is found that, there is no such study carried out in Karnataka region, where a strong cluster of research libraries exists. Based on this review a study on “Use of Information Technology in select Research Libraries in Karnataka” is conducted.
References:


16-29) Urbana, IL: Graduate School of Library and Information Science, University of Illinois.


