Chapter - 9
Conclusions and Recommendations
and A Plan
CHAPTER 9
CONCLUSIONS, RECOMMENDATIONS AND PLAN

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Introduction

The present day is seized with electronic libraries also called virtual libraries with active involvement of electronic media and on-line desktop libraries services. In the western world the physical libraries have since been transformed into electronic libraries with the advent of new technological tools. The university education system in India could not exploit the vast potential of the technological innovations to serve the user community- the most benefiting way it deserves to be due to various reasons. There are several factors which influence the derecognition of the age old concepts and realization of the virtual realistic advantages of the technological infrastructure and their use in libraries in India as elsewhere in the world. Among the factors responsible for the apathy are the organisational structure of educational pattern and polities in India. The financial constraints and lethargic on the part of decision makers at the university level as well as at the national level contributed to the non-adoption of the technological developments. Deliberations in no way contribute to the personnel involvement to initiate the automation levels. If appropriate plans envisaged in realistic tendency at appropriate time, the Indian university libraries would not have suffered backwardness in the adoption of technologies for various services.

Technology

The conventional libraries have to transform without any further delay and adopt new technologies such as interactive information services became available with the network computing relays on the Internet to provide instant access to information all over the world. The Internet the network of networks; provides the ideal backbone for network computing society, a system, allowing incredible mobility for information seekers. Similarly, any system can be accessed through a standard web browser for the use of universal client deviser (UCD). The Internet allows information exchange data quickly, easily and securely over standard protocol.
2 Digital Service

Information service to the utmost satisfaction of the information seekers should be the base of university libraries through the means of digital libraries. Since 1991 the University Grants Commission has initiated the task of transforming the university libraries into digital libraries and funds are being granted. The size of the library and the user clientele for information requirement should be the main criteria to select and build the infrastructure namely, software and hardware for the so called digital libraries/virtual libraries. Business world has already exploited the technologies to match the changing demands of the competitive times. The personnel are also tuned and trained on the handling of infrastructure to meet the challenges, through technology adoption to service. Thus technically all kinds and all sorts of infrastructure to automate the library services are available in the Indian markets. Thus libraries can automate their operations and transform all their assets just by spending over few lakhs of rupees to start with and then go on adding new ones depending on the contingencies. This demands dedicated, motivated and trained professional personnel. It is a matter of dedication and self involvement and motivation onto the technology adoption which transforms hitherto conventional and traditional libraries as digital libraries serving not only the limited sphere of institutional users but also the users at the national and international level at a later stage.

3 Choosing Hardware and Software

A configuration that may-be suitable to a moderately sized library having volumes over one lakh to three lakhs may plan their operations with the undermentioned infrastructure. Several brands of hardware are available in market and the library manager has to ensure service backed equipment and the suppliers should attend to any service/breakdown without much trouble. The most important point here is that hardware
adopted should allow for any new developments in technologies to be enhanced or modification at a lower cost the capacity of the library and serve to more and more users rather than being rendered obsolete. An important and essential prerequisite on the part of library managers is the allocation of at least 10% recurring grants for annual maintenance of hardware and software acquired, to ensure uninterrupted service of automating equipment. Motivating library professionals for handling equipment and automation process is another essential ingredient to attain the cherished goals of information services.

4 Flourishing Image

The image of the university library service should be adjudged in relation to the adoption to new technological innovations to maximize the usage of information in the scientific endeavors. The new technological scenario in India is quite conducive to the university library services and achieve the purpose for which libraries do exist. It is time to boost the image of library services to meet the growing information challenges by tapping the emerging technological innovations. Personnel motivation and corresponding accomplishment of information services through the means of new technology would eventually enhance the image of the university library services in Gujarat. The electronic devices, the Internet and Web are the captivating areas which can enhance wisdom and serve the user community to a greater extent.

The adoption of information technology and of computer literacy are essential to sustain the developments in Gujarat. The days are not far away even to have kiosks equipped with electronic board to provide new marketing information and providing data for employment opportunities, etc. The electronic innovations facilitate discussions with experts in different fields and lead to real information technology-led governance. Those who cannot work with computers would be labeled soon as illiterates as regards information technology revolution is concerned. The
wireless devices are ultimately going to perform a host of jobs which ultimately make even cellular phones obsolete. Therefore, the concept of electronic governance should be initiated in all the university libraries to generate and utilize vast information for the development of the mankind.

5 Observations

From the analysis of replies received on the questionnaire the following observations are made:

1. It is observed that all the eight university libraries have more than one campus / department library situated at various locations. One university has more than thirty campuses. Two universities have more than 20 campus. There are also P. G. Departments at affiliated colleges.

   Due to the different locations it is very difficult to offer similar library and information services and network facilities to the academic community at all these campuses. It has also created managerial problems and demand for more funds for enhancing library resources and more library personnel. Librarian’s control and responsibilities have increased and become complex.

   All the above problems can be reduced to a great extend by computerization and networking.

2. Due to emergence of new courses of studies, emergence of multi and interdisciplinary courses, a trend is noticed to establish more P. G. Departments in universities at various campuses and at affiliated colleges. These have created a number of problems to provide library and information services to academic community.

3. There are nearly 461 affiliated colleges in all the eight universities at present. The highest number of colleges are in arts and humanities areas, then in science and applied sciences. All these colleges have to depend on the resources mostly available at university libraries.
4. Because of importance of higher education, the number of UG and PG students, research students and faculty strength has increased to unbelievable level. It is also seen that more students are registered in different types of courses under arts, social sciences, sciences and applied sciences. But the result is that the university libraries do not have provision to increase adequate resources, services and personnel simultaneously and automatically.

5. It seems that number of research students are very less as compared to other types of readers in the state. So there is a need to give some special type of facilities, to attract more students for research areas. The society can go forward in new dimension only with the help of research.

6. The ratio of the faculty strength and students is vary low. It also varies from university to university. Keeping the faculty aware of latest developments in their subject areas has to be taken care of.

7. Highest numbers of colleges are in urban areas, while women colleges are more in rural areas. This issue deserves consideration.

8. It is observed that all the eight university libraries have books, bound volumes of periodicals, theses and dissertations. Except one library, other seven libraries have no non-book materials, 50 % libraries have no electronic materials and any other types of materials. Some libraries do possess, technical reports, manuscripts, maps, charts, pictures etc., but the number is very small. Hence the library services are limited to books, periodicals, dissertations and theses. The total collection seems to be limited compared to size of the students, faculty and research community. It is due to financial constraints, attitude of authorities and the purchasing power of the students. It shows necessity for sharing of resources.
9. The number of current periodicals subscribed and received are also very small compared to number of users, courses offered and research activities offered. It is also observed that only Gujarat Vidyapith library subscribes to more than 500 Indian periodicals. M S University library and Gujarat University library subscribes to less than 250 Indian periodicals. Saurashtra University library and Bhavnagar university library subscribe to less than 200 Indian periodicals, while remaining three universities receive less than 100 Indian periodicals. Only M S University subscribes to about 351 foreign periodicals, while remaining seven universities receive less than 100 foreign periodicals. The students and faculty have to go elsewhere to refer foreign journals for updating themselves and for research work. This issue is becoming critical.

10. It is seen that some universities are not even getting a single foreign journal due to high lost and constraints for funds. This will have an impact on research and higher studies. Users are unable to get the latest information, which are found in the foreign journals, M. S. University is spending more than Rs. one crore, while most others less than a lakh of rupees.

11. All the eight libraries have reported increase in the number of library users. Particularly, students population is increased under Arts and Humanities areas. The faculty and research students strength have also increased in all fields.

12. All the eight university libraries offer open access and hence allow for better use of library resources.

13. All the eight university libraries reported to offer book house-lending service. Most of the university libraries provide reference services, photocopying services, and Inter library loan service. CAS and SDI services are less offered services, News update services, Access to International database, Access to local and national database and Non book services are practically nil.
None of the university library provides abstracting and indexing services, translation and microfilming services.

14. Six university libraries have reported to work 10 to 14 hours a day, while two libraries are open for 7 to 7.30 hours a day. Four university libraries are open on almost all days of the year except some holidays. Remaining four university libraries are open for six days and close on Sunday and 2\textsuperscript{nd} and 4\textsuperscript{th} Saturdays. Three university librarians have suggested to increase library hours and also to remain open on Sundays and holidays.

15. Six university libraries follow DDC while one follows LC and another one follows CC. Seven university libraries have adopted AACR-II, while one has adopted AACR-II and CCC. The university libraries have adopted Sear's list of subject heading while two university libraries have adopted L.C.

16. It is observed that all the eight university libraries have photocopier machines, and they are providing photocopying services. Only three university libraries have microfilm reader.

17. It is observed that none of the university library has sufficient staff. Two university libraries have reported that the post of university librarian in the professors or readers grade are vacant for a long period, due to non-availability of qualified and experienced persons. This has affected proper development of the library. There are no posts of deputy librarians. Libraries are mostly run by assistant librarians. It is also observed that there is no uniform policy for the staffing.

18. As per data received, during the last five financial years budget approved for the libraries, is very insufficient.

19. During the 8\textsuperscript{th} and 9\textsuperscript{th} plan periods, grants given by UGC varies from university library to university library. It has therefore hindered proper development of university library.
20. All the eight university libraries have received UGC grants under INFLIBNET programme, but at different levels. Two university libraries did not receive at initial stages but much later and the grant approved is very less. Hence the infrastructure are not properly developed.

21. Regarding hardware configuration, seven university libraries have Pentium III and printer while one university library is in process to procure the Pentium III. Four university libraries have modem facility. They are unable to provided proper computerized and networking services to their users. Not a sigle university library is fully computerized.

22. Hub is not available in any university library. Hence extension of networking is not possible in the university libraries. None have provision for optical cable installation.

23. Only one university had started library modernization programme before the receipt of grants from INFLIBNET centre i.e. prior to 1994-95 Six university libraries have reported to have under taken some of the house keeping operations with the use of locally available software.

24. It is observed that all the eight university libraries are agreed that automation would result in saving the time, and of manpower but would provide better services.

25. Six-university libraries are using SOUL software. It is very recently installed, while two university libraries are using their self-created software and are concerned about its use in future.

26. The data revealed that two university libraries are using Win NT, while five are using SCO-(UNIX). Novel NetWare. Five university libraries are using Linex. Seven are using Window 95/98. Only one is using MS SQL. All university libraries are using CDS/ISIS.
27. All the eight university libraries have started to create databases of books, serials and thesis using CDS/ISIS software. But the database creation activity is going very slow, at snail’s speed.

28. Except for two university libraries, other university libraries have separate telephone lines, which can be used for library networking activities.

29. Due to lack of infrastructure facilities none of the university library have offered resource-sharing activities using computer.

30. INFLIBNET centre provides various types of assistance such as recurring, and non-recurring grants, staff training, assistance to procure the computer system, software, guidelines for data capturing manual, etc. but it is observed that not all the eight university libraries are benefited fully because of various problems.

31. It is further seen that none of the university libraries offer computerized library operations (house-keeping, technical processing, preparation and production of tools and services, budget control, personnel records, reports and correspondence, statistical records, accounts, circulation work, provision of reminders, generation for overdue records, computer assisted reference and query system), preparation of indices, compilation of bibliographies, SDI services using foreign commercial databases with indigenous or imported software, number of by-products can be retrieved from machine-readable file.

- Creation of national bibliographical databases including referral and access tool and directories.
- Creation of non-bibliographical databases – numerical and factual. Management of information system for library and information resources management, including generators and indicators for framing policies and plan.
- Report generation, editing, deleting, changing the layout, insertion, proof checking, etc.
- LAN with microcomputer workstation for reader services and housekeeping, shared printing facilities, shared file storage and shared database and catalogue function.
- Electronic mail facilities.
- Online transfer and exchange of information.
- Resource sharing among university libraries.

32. From the replies received it is observed that in all the eight university libraries, not a single university library has drawn up a systematic plan for computerization and networking of their library. There is need to have a systematic and a time bound plan to undertake this activity.

33. From the replies received and based on personal discussions with university librarians clarification was sought from the following areas:

A. Whether the library had already adopted a scheme for modernization of library before the INFLIBNET came in the scene.

B. Whether any plan was drawn for undertaking modernization of their library, and its implementation and for possible use of multimedia, etc.

C. Whether INFLIBNET had suggested any detail plan for modernization of library, and time schedule and evaluation scheme.

As regards ‘A’ it was seen that only Gujarat Vidyapith had undertaken library computerization programme before the INFLIBNET programme was initiated. They adopted locally developed software activities. It was not based on any library approved standard. This software developed had number of problems. No written manual was prepared. Crises developed later on after the software specialist left the job, and the software had to be rewritten.

As regards ‘B’ none of the university library had drawn up any written plan for computerization of university library nor a detail plan was prepared
for implementation. Further none of the professional staff member had any exposure to computer handling and not possessed practical experience. Hence when the proposal from INFLIBNET centre was implemented librarians required training for themselves as well as their staff.

As regards 'C' librarians reported that they had not received any detail or actual step by step plan for modernization of library services from the INFLIBNET centre nor any time schedule was prescribed, except in bits.

In the absence of 'B' and 'C' it is not clear how the university librarian undertook INFLIBNET centre’s programme. It was done in ad-hoc manner.

34. It is seen that computerization of the libraries, uses of databases and database creation activities has been very slow. Hardly any library is offering networking services to their users, the way it was expected.

35. Barcoding is not available in any libraries. Hence in the absence of this it will be very difficult to offer quick and error free charging and discharging activities. Librarians will not be able to do stock-verification of their resources speedily.

36. All the librarians are of opinion that they could not afford the use of commercial software due to high cost. They have to depend on INFLIBNET centre to provide money for the software. Their MOU with INFLIBNET also provided for use of software as approved by INFLIBNET. They themselves were in the process of developing their own software. It was only in February, 2000 INFLIBNET’s new software SOUL was issued. Some university libraries like S.P. University Library and Gujarat Vidyapith Library had developed their own software in-house and some housekeeping jobs were introduced. However, their use was limited. Further they also did not provide networking services, nor defined their objectives and plan of implementation. All the university libraries were working on ad-hoc
basis for the modernization of their libraries, having no defined plan. Hence their progress could not be assessed.

37. In the modern set up and keeping in view the strength and usefulness of university library, it is very essential that each library should re-draw their aims and objectives of library services they would propose of offer to their academic community in the modern context and also include internet services, the importance of library co-operation at local, state and regional level and thus become a part of national and international co-operation.

Suggestions and Recommendations
Considering the various problems recorded above the following suggestions and recommendations are made:

1. For early data conversion, data entry personnel be appointed on contract project basis.

2. Library staff should be trained in computer use. University may sponsor library staff for training in computer institutions at local level. Also the existing staff, be given training and retraining at regular intervals. Hence need for staff training programmes. Manpower requirements and existing qualifications for various posts have to be reexamined keeping in view new and emerging job requirements.

3. There is urgent need to introduce proper practical and hands-on courses for the use of IT. There is a need to organise managerial courses for senior librarians.

4. Looking to the requirements of manpower, the post sanctioned under INFLIBNET programme should be filled up immediately.

5. Library catalogue should be made available on computers and action to enhance its use through users orientation programmes.

6. The University Library Media Resources should convert its bibliographic holdings into machine readable form and provide access
to this information through on-line catalogue, to the remote users also.

7 Action should be taken by the university library to provide automated information services and processes.

8 Computerised readers services should be started as early as possible.

9 There is also need to popularize the use of multimedia services and make them easily accessible to and utilized by all academicians.

10 Internet should be used as a tool for promoting services / products to both in house as well as external users.

11 To cover all the affiliated colleges departmental and campus libraries, LAN facility should be provided immediately.

12 The users education programme in new information technology must be under-taken by the library in a systematic way every year.

13 A variety of products of high quality IT series are the need of the hour to be pressed into the university library scenario in Gujarat.

14 New products and services should be launched tailored to users’ need.

15 For the convenience of users, distribution channels such as mail, messenger, telephone, online, e-mail etc. should be used for delivery of information.

16 The university libraries should initiate action to establish a separate marketing division for popularising their information products and there create avenues for earning additional revenues.

17 There is an urgent need to develop next-generation, web enterprise management solution.

18 For uniformity and consistency there is need to develop new standards due to changing environment, emergence of newer media, new services, communication, networking and computer and IT changes. Importance should be given on team management and total quality management.
19 INFIBNET programme required to be followed vigorously. There is a need to draw up programme for data conversion and networking with in a period of one year. Also a programme / plan for converting the present libraries to digital libraries and thus to be a part of global environment.

20 Keeping in view the emerging demands in the 21st century there is need to convert and develop university libraries to become "Information Centres" beside offering the traditional library services and thus to become a part of global information services.

21 Library budget for books etc. is not adequate for library clearing to 8000 to 10000 students provision fo hardly Rs. three lakhs is noticed. It is suggested that definite proportion or percentage of total university budget be remarked to university library considering its importance and constant increase in users community, explosion of publications and emerging new subjects, and information sources and also importance of current concept. Information as power.

22 The library should send the machine readable data to INFIBNET centre regularly for check and for creation of national level data bases.

23 There is an urgent need to go for Local Area Networking (LAN).

The questionnaire was divided into five sections having 257 queries in response to the three objectives set by the researcher. Sections A and B of the questionnaire, having 74 questions (40.47%), were to find out the conditions existing in university libraries in response to objective no. 1. Sections C and D of the questionnaire, with 130 queries (50.58%), were to find out the modernization activities undertaken by university libraries in the response to objective no. 2 and the section 'E' of the questionnaire having 25 queries (8.95%), were to get librarians perception as regards objectives 1 to 3.

From the analysis of the replies to the questionnaire as regards to objective no. 1 of our study, it is seen that at the present position,
automation, activities at the eight university libraries in Gujarat State. It has not made much headway. As regards objective no. 2, we notice the progress of modernization of university libraries activities under-taken by eight university libraries under the INFLIBNET programme, has been very slow and not visible though nine years have lapsed since the establishment of INFLIBNET centre in 1991.

7 Plan for Action

As regards objective no. 3 of the study undertaken, the researcher suggests an action plan for:

A) To computerize the resources of Bhaikaka Library of the S. P. University and to offer on line facility for the benefit of the users of the library. The work to be completed on a project mode basis and in a time bound period namely, eighteen months.

B) To develop a model to offer networking facilities on the university campus to cover all the departments of the university, as well as affiliated colleges and thus to create ANANDLIBNET city network. Under this programme the resources of the university library could be made available and accessible not only to academic users of the university but also to the community in the city including rural and urban areas around Anand and extended to other information seekers. It will help in ultimately creating a state and national level academic information network. This has became a immediate necessity to help our country to maximize the social and economic benefits.

Dr. R. A. Malshelkar, the eminent scientist has drawn our attention in his latest article, published in the Journal of Chartered Secretary in its issue of January 2002. He aptly refered that the 21st century will be the century of knowledge, indeed the century of the mind. Innovation is the key for the production as well as processing of knowledge. A nations ability to convert knowledge into wealth and social goods through the process of innovation will determine its future. In this context issues like, generation,
valuation, protection and exploitation (of knowledge) are going to become critically important all around the world. Increasing growth of scientific knowledge demands easy and quick access to knowledge and transmission of related information, increasing domination of the new knowledge economy over the old brick and mortar economy. Complexities linked to traditional knowledge, community knowledge and animate objects will poise a challenge in setting the new 21st century agenda.

As been recognised in 1948 Universal Declaration of Human rights-every one has the right to share in scientific advancement and its benefits. Even our constitution provides for free information. It is essential that in the interest of the individual, country and society, we provide for facilities for access to information and for its transfer, exploitation and use for the benefit of the society ready the university libraries in the state to provide facilities to easy access to information, it possess easy transfer and its exploitation by the users because of various factors. In this context the researcher feels that the modernization of university libraries in the Gujarat State should be taken up on a war footing, a time bounded project of not more then eighteen months. So that, the libraries present holdings are converted into machine readable form and available on-line to the academic community of the university and other universities in the state. This will entail each university library to computerize its holdings and to develop networking facilities on its campus to cover all the departments of the university and affiliated colleges. It also proposes to provide for to linkages to all the university libraries for resource sharing and to maximize the use of information available in other libraries.

As the community also needs information that is available in the university libraries it is proposed to develop an Information network, namely ANANDILIBNET in the case of S. P. University. This is in-consonance with the objectives initially framed under the INFLIBNET programme.
To achieve objectives, the following is proposed:

1. Computerization of all the activities of university library on priority basis on the time duration of eighteen months. All library housekeeping jobs, viz. acquisition of resources, classification, of documents circulation control, serial control, reference and information services, etc. to be computerised. From a definite date all new acquisitions would be done in machine-readable form. As for retrospective conversion, the work should also be started simultaneously. This work be done on a project mode through approved contracted party. They also are responsible for actual conversion of records and creation of databases and for editing the databases created. All the created databases sent be to INFLIBNET for editing and merging into national databases.

To complete the above mentioned work in creating university’s library databases, it is proposed that one time provision to meet the expenses to convert the records in a time bound period be made as a special case.

So far as S. P. University Library is concerned for retrospective conversion of library records as per prescribed norms by INFLIBNET, would be as follows.

A provision of Rs. Four lakhs to digitize Two lakhs library records at the rate of two rupees per record that is two lakhs for database creation and for editing work Rs. Two lakhs.

No provision for expenses on hardware is envisaged as the library already possesses required hardware.

As regards big libraries, namely Gujarat University Library and M S University Library since their records are huge namely over six lakhs records, provisions of Rs 12 lakhs for Gujarat University Library and Rs 16 lakhs in the case at M S University Library will have to be made.

Once the retrospective conversion work of available databases is made, the library will be ready to offer computerized service and access.
their records at university level, state and national level and will be ready to enter the 21st century.

2. The second issue would be to simultaneously develop networking facilities and linkages to other universities through telecommunication system. This will encourage resource sharing and online access to information. I propose that the university library should also develop a city network and to make available the information it has in its collection to industries, R & D centres, etc. at a reasonable price and without much affecting the library staff. It will allow the libraries to generate new sources of income in the course of time. The fund so created could be used for enhancing computer, communication and IT facilities and other items of expenditure that may arise. In this way academicians as well as society could be benefited and the burden on the university and the state government would be reduced.

3. All the university librarians lack exposure to computer related activities, and are not able to get proper guidance. It will be necessary that a detailed plan for library computerization and networking and to offer various services to be made. If this activity is started and implemented, it is also necessary to have a time bound programme to be implemented in phases. The researcher also felt the rich collection of university library be also made available and exposed to community at large on the campus and other campuses, affiliated colleges, university campus, city and outside. That rich and valuable collection of library be used by one and all, who needs information. Then researcher has therefore submitted a plan for i) computerization of the library activities including housekeeping jobs of the library ii) networking facilities and resource sharing, iii) LAN and WAN facilities within the city and outside and to create a city network system and these be extended to cover the other university libraries of the state, and the country and outside.

7.1 Proposed Co-operative Network
To keep pace with the changing scenario of the IT, the computerization and networking is major thrust area for the university libraries in Gujarat state. Under this plan each university library shall be systematized with computer network facilities by adopting LAN and WAN technologies.

First of all each university library will have to be fully computerized. Then each university library will develop their campus-network. Each university library will be a co-ordinating centre.

With the campus-network of each university library, all other academic, industrial, commercial institutions and R & D centres of their city will be connected. Thus city network will be developed. It may be extended to districts in future.

All these eight university libraries networks and city networks will be connected through a powerful state capital hub at Ahmedabad or the hub at INFLIBNET centre proposed by the UGC.

Due to the linkage all the university libraries will be able to transfer and exchange their information with each other as well as with other institutions.

The above network is sample of the proposed network structure for university library campus and city network.

The network would be hierarchical, centralized and decentralized. Each university library would function as a co-ordinating centre.

7.2 First Level

First Bhaikaka library of S. P. University, Vallabhvidyanagar will be fully computerized. One network will be started for the library operations and services which will connect various sections in the library. SOUL software will be used for house keeping operations and other operations. There will be two hubs to connect the computers in different sections and UTP cables will be used. It will run on Sco Unix Platform and all nodes at different sections will have Windows 98 installed in it, to run the client server of SOUL.
Another network will be established within the library to connect different machines used for Internet services. It will run under Windows NT platform and it will facilitate Internet connection to teaching departments, offices within the campus. The connections to the departments will be made possible through main hub at Bhikaka library-using modems at both the ends. For this purpose university library have to purchase good numbers of modems. The necessary computer system for Internet connectivity will be provided by the concerned departments. Thus campus-network will be worked as a whole system.

Network for library resource sharing can also be established. The objective of a computer and communication network can be attained without much expense. By establishing such network all the participating libraries will be able to browse the catalogues of the Bhikaka library without visiting the Bhikaka library and vice versa. If all the libraries participating in the network prepare their catalogue in machine-readable form and make a collective database like union catalogue, then by establishing a network all members of each library will be able to know what is available in other libraries. This will further help to reduce the unnecessary duplication of reading material in different libraries.

7.3 SECOND LEVEL : ANANDILIBNET

The campus network and city network will be developed jointly. The developed network will be known as ANANDILIBNET (Anand Information and Library Network). It will be supported by NISSAT as it is responsible to develop city networks.

Bhikaka library, S. P. University, would act as the co-ordinating centre. All the P. G. Departments, affiliated colleges, academic, commercial, industrial and other institutions, R & D centres etc. in Vallabhp vidyanagar as well as in Anand areas will be connected with the main hub provided at Bhikaka library, S. P. University. This main hub
may be in Bhikaka library or in any other departments of S. P. University. It will be better if it is located in the Bhikaka library. Thus university campus network and city network will be developed as a ANANDILIBNET.

ANANDILIBNET would be extension of original information network suggested by INFLIBNET centre earlier. However, it will cover both the S. P. University and its affiliated units as well as R & D and other information centres in the city and adjoining areas. In this way the university library network will really became network covering both academic as well as special and research libraries and other institutions in and around Anand. In this way it will make university library network more effective, cost-worthy and all comprehensive.

The suggested model could be applied by other university libraries and thus created network of academic libraries, special libraries, R & D and other institutions.

7.3.1 Objectives of the ANANDILIBNET:

The reasons for participating in the network are minimization of duplication, providing all types of services to their users; saving of costs especially foreign exchange and overcoming financial constraints, etc. The following objectives are therefore proposed for the ANANDILIBNET

a. To evolve a network of S P University library, all the departmental libraries and affiliated colleges, R & D Institutions, commercial and industrial institutions for optimum utilization of information resources.

b. To optimize the utilization of funds by minimizing duplication in all spheres,

c. To provide access to document collection of all the libraries in the ANANDILIBNET.

d. To improve the inter-library loan services among the libraries with smooth and speedy exchange of information through cheaper telecommunication links.

e. Standardization of library services and activities.
f. To facilitate inter-communication and cooperation among the libraries and information centers in the Vallabh Vidyanagar as well as Anand areas.
g. To encourage co-operation among libraries, special libraries and information centers in the Vallabh Vidyanagar as well as Anand Areas.
h. to provide access to other national/international networks.

7.3.2. Salient Features of ANANDILIBNET:
The following would be the salient features of ANANDILIBNET.
1. A library would be able to request the documents etc. needed by its users on inter-library loan from other participating libraries.
2. It would be possible to identify books and other documents available on a subject in order to facilitate development of proper collection.
4. It would be possible to share cataloguing of reading materials, by using the descriptive information and thus maintaining standards and reduce costs.

7.3.3 Network Services by ANANDILIBNET
The following services will be offered by ANANDILIBNET
1) OPAC
   An On-line Public Access catalogue to the entire holdings of Bhikaka Library enables users from different departments in the campus to have on-line access to the library database from their terminal. User can search a particular topic from the journal, book database etc. and get a print-out of the list of references, on the search topic. Users need not come to the Bhaikaka Library to enquire or search a book or to get a list of references on a given topic.
2) Reservation
   User can search the databases and reserve a particular book from their terminal if the required book has been issued.
3) Reserved Books
User can also view the list of reserved books. If a particular book has been reserved by a number of users, the order of reservation can also be checked as the date and time of reservations is also recorded.

4) User status
User can find out what are the books issued to them at any given time and when they are due from return. Reminders can be sent to the borrowers in advance. However the cumulative reminder for overdue books-standards/back volumes will be available on the network till the document will be returned.

5) Current Awareness Service (CAS)
List of latest additions of books, journals, CD-Roms and other documents to the Library can be displayed virtually on the LAN/WAN for users attention.

6) Selective Dissemination of Information (SDI)
Users e-mail requests maybe collected and matched against the latest documents and the matched ones can be sent back to the required user which can be possible only through networks.

7) CD-ROM Network Service
CD-ROM Network service can be provided through LAN or WAN so that a large number of users will be benefited at a time. They can retrieve information relevant to their needs within a reasonable time from any of the CD Roms provided in the CD ROM Tower.

8) E-mail Services
E-mail services can be provided by the Bhikaka Library and also through Internet. A message can be easily posted to all the departments using common mail ID-sernet. The Bhaikaka library will use this e-mail ID to send/post any message to the departments. A number of electronic newsletters and user-group discussions can be subscribed by the Library via. e-mail and can be forwarded to all the users in the network, if the information is found to be useful.

9) Bulletin Board Service
A Bulletin Board is a public discussion area where people can post messages without sending them to anyone's e-mail address — that can be viewed by anyone who enters the areas. On campus serve a Bulletin Board is called a Forum. On the Internet, the equivalent areas are called News groups.

Separate Notice Board option can be created through e-mail facility and the latest information of the daily news, job opportunities, admission notices, entrance examinations, scholarships and fellowships, new courses etc, can be posted and made available for the through this Bulletin Board service.

10) Indexing and Abstracting service
For the benefit of research scholars, indexing and abstracting services for the latest electronic texts and journals may be provided through the network.

11) Content page service
Content page service of the electronic publishing as well as important R & D oriented books and journals can be provided through LAN/WEB.

12) Internet service
Internet has become a boon to the user groups. It is a world wide web of interconnected universities, business and science networks and is a network of computer networks. It is made up of Local Area Network (LANs), citywide Metropolitan Area Networks (MANs), and huge Wide Area Networks (WANs) connecting computers of organizations all over the world. These Networks are hooked together with everything from regular dial-up phone line to high speed dedicated based lines, satelites. The three basic Internet applications or functions are Electronic Mail, Remote Log-on and the File Transfer. Services such as mailing lists, directory, enquiry, usenet news and tools such as Archie, Gopher, WAIS, Vernica, WWW, etc. go beyond the three basic Internet functions to bring people closer on the Internet and make Information on the network easier to locate and use.
Internet has two main uses; One is person-to-person communication and other is finding information.

7.4 Implementation Plan:

It is to be kept in mind that before the actual implementation of the proposed ANANDILIBNET, a detailed system analysis will have to be done. ANANDILIBNET will be model for other university libraries of Gujarat State. All the eight university libraries can be followed this plan. The success of this project depends upon the following factors:

1. Having adequate computer facilities.
2. Appointing and training the library personnel for development and maintenance of the system.
3. Collection, context and methods of entering bibliographic data.
4. Existence of an efficient and reliable communication system.

7.4.1 Phase-wise Implementation:

Considering the existing infrastructure facilities, financial resources, manpower and technological aspects, the implementation of ANANDILIBNET is considered in a phased manner.

It is felt that in the given circumstances, a three-phase implementation is ideally suitable for implementing the ANANDILIBNET.

7.4.1.1 Phase I

There is a basic requirement to be drawn a technical plan. The technical plan will be prepared with the help of computer experts.

1. Computerization of each library and participating libraries under ANANDILIBNET.
2. Selection of proper location of the computer laboratory.
3. The laboratory should consist of required hardware. It should also contain layout of hardware CPU, Printer, Nodes, and also electric installation plan, switches and earthing, writing, stabilizer- to take care of electric fluctuation etc.
4. Software installation
- The authorised integrated library management software, (SOUL prepared)
- Other software as per requirement
5. Nodes.
- Laboratory should have at least two nodes besides the CPU.
- Nodes should be provided to all the departments.
  At least two nodes should be given each for students and for faculty members. These nodes should be located very close to the circulation section.
  Each section, acquisition, serial control, circulation, cataloguing, reference services should be provided at least with one node. But circulation section should have two nodes for charging and discharging activities. For internet use, there should be separate nodes.
6. Air conditioners
7. Training of staff
8. Housekeeping work

First of all, all the housekeeping functions e.g. acquisition control, serial control, circulation control, fine system, users records, cataloguing etc. should be started. With this database creation activities should be started. Both the work should be completed within eighteen month. One year for entering the data and six month for editing of the entered data. Then the data merging with INFLIBNET record.

The current data should be computerized at a given time and parallel work should be started for retro conversion work.

These work should be finished within eighteen months.
7.4.1.2 Phase II
1. Setting up of the network.
2. Linking of the individual libraries into the network.
3. Introduction of various users services through network.

7.4.1.3 Phase III
1. Bringing the special libraries, Research and development organizations into the network.
2. Linkage with other university libraries networks in Gujarat state through state capital / central hub at – Ahmedabad.
3. Handshaking with other local, national and international networks like INFLIBNET.

As per the above phase-wise targets, the software modules to be developed first will be the packages required for automation of individual libraries such as acquisition, fund accounting, serials control and circulation; the catalogue creation of a standard CCF, communication module. As they are developed and being implemented, the other modules required for updating of databases and utilities for networking and text retrieval to help in searching can be developed.

4. User's training should start for a successful library network. The use of Information product and services should be started.

7.5 Hardware Configuration

7.5.1 Suggested minimum Computer Hardware Configuration:
A Configuration

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Terminals (PIII)</td>
<td>32-64</td>
</tr>
<tr>
<td>Clock speed</td>
<td>800 MHz</td>
</tr>
<tr>
<td>RAM</td>
<td>64 SD RAM (each)</td>
</tr>
<tr>
<td>Storage requirement</td>
<td>20 GB (each)</td>
</tr>
<tr>
<td>Disk I/O</td>
<td>5 Mega Bytes/ hr.</td>
</tr>
<tr>
<td>Printing Load</td>
<td>2000 pages/day</td>
</tr>
<tr>
<td>Communication Load</td>
<td>5 Mega Bytes/day</td>
</tr>
<tr>
<td>Fax</td>
<td>3000 bytes/day</td>
</tr>
</tbody>
</table>
keyboard, monitor, mouse, modem (as per our requirements)

B Technical Specifications

1. 32 bit main frame computer with 800 MHz clock speed, mainmemory 64 MB and disc space 20 GB.

2. At least 32 terminals of PC-AT and at least two colour graphics terminals.

3. Provision for connecting.

4. One each of Lesser Printer, dot-matrics and one letter quality with 300/pm, 30 cps speed.

5. One each of back up and I/O processor

6. Two streamer-tape drives and two cartridge tape drives

7. Desk top publishing, two CD-ROM drives and two fax machine

8. To run under Unix or an equivalent multi-user operating system

9. Availability of communication software.

7.5.2 SUGGESTED NETWORK HARDWARE CONFIGURATION AT EACH NODE IN THE ANANDLIBNET SYSTEM

1. x.25 PAD cum switch

| a. Function | Lay out should be configurable to synchronous (x.25) on asynchronous |
| b. No. of ports | 8 or 16 |
| c. Line speed | Upto 64 Kbps on synchronous Upto 19.2 Kbps on asynchronous |
| d. No. of virtual | At least 350 circuits. |
| e. Throughput | 60-80 bps with 128 byte packets |
| f. Call set up capacity | 20 per second |
| g. Frame Level | Module 8 |
| h. Maximum packet size | Upto 512 |
| i. Protocols supported | x.25, x.3, x.28, x.29 CCIT 198 recommendation |
| j. Power requirements | AC 230 V + 10% at 50Hz + 2% |
| k. Environment | Ambient temperature, 5 to 40 Degree C |
2. **x.25 Interface Card**

   a. **Bus Compatible** : with either At Bus or VME Bus
   b. **Logical channels** : At least 16
   c. **Line Speed** : Upto 19.2 kbps
   d. **Protocols supported** : x.25 1984 recommendations x.3,x.28, x.29 Server software (1984 recommendations)

3. **Modems**

   a. **Data format** : Asynchronous/Synchronous
      (selectable)
   b. **Data Rate** : 28800/14400/9600/2400/1200/300
      bps with fall back capacity
   c. **Compatibility** : V.22, V.22 bis, V.23, V.21
   d. **Interface to DTE** : V.24/V.28 (Rs. 232 C)
   e. **Line Interface** : 2 wire dial up (full duplex) and 2
      wire leased line (full duplex)
   f. **Error Control** : Built in
   g. **Diagnostics** : Built in
   h. **Dialing Capacity** : Auto/Manual Dial Auto/ Manual
      Answer V.25 bis compatibility.

7.6 **Software Requirements**

   The computers can not work without software, hence the basic software i.e. operating system is a must. It may be UNIX, Windows or DOS.

   For connecting the computers through telecommunication links, it needs director dial up link, login name, password, gateway, IP address, etc. To establish connectivity between different softwares, running in incompatible plateforms, softwares known as protocols are needed.

   For connecting website it needs Java compiler and for searching website it needs search engines.
For Library operations it needs to have SOUL.
The list of softwares required is given below.
- Operating System
  - Windows-95/Windows-98/Windows-NT/UNIX/DOS.
- Applications Software
  - SOUL (CDS/ISIS based package) developed INFLIBNET
- Communication Software
  - PPP
  - TCP/IP
  - FTP
  - UUCP
  - VT-IPX-SPX 100 terminal emulation

7.7 Other preparations:

7.7.1 Preparation of site for Internet nodes
Library should identify an area for installation of Internet node. A particular area in the library should be allocated/identified for internet facility for this purpose. It should be near the Optical fiber connection. This should be equipped with chairs, tables, electricity supply and portion with security arrangements. Library should identify resources available on Internet for different subjects.

7.7.2 Preparation of Directory
A directory of Web Sites useful for each subject be prepared along with the contents, databases, available on web sites with their Internet addresses and be provided to the post-graduate departments.

7.7.3 Access to Information
For accessing the information or databases which are free based (it is necessary to change fees) or subscription is to be paid by the library. Recommendations in this respect are invited from Heads of the Departments and scholars and necessary budgetary provision be made in the periodicals budget of the selected library. A separate allocation is
made from periodicals budget for subscribing to databases available on Internet not received elsewhere in the university to avoid duplication.

7.7.4 Training
Training is very important. It should be given to the students and staff members in the use of Internet resources for identifying, locating and for downloading information is permissible.

7.7.5 Maintenance
1. Funds be allocated for maintenance of this service/equipment this unit.
2. Fees be charged for this service from the students etc. This item is place before the Library committee for consideration.
3. Collection Development policy of the Library may be modified accordingly.

7.7.6 CD Collection
CD's useful for research be acquired from the budget allocated for periodicals and books.
For this purpose CD-Net of 14 CDs be purchased and installed in this unit. This will facilitate to access CDs from any node from the library or even on internet it connected to optical fiber connection.

7.7.7 Staff
One professional staff in the library be made in-charge of this service. He should be deputed for training required for this purpose and also other staff as per requirement.

7.7.8 Design of Web Site for Library
Web Site should be designed for the library. In this web site information towards the library services given by the library as well as collections available in the library be advertised. Documentation lists and bibliographies complied by the library be disseminated to other university libraries in particular to Indian work in general.
UNIVERSITY NETWORK ALONG WITH CITY NETWORK
(ANANDILIBNET)
7.8 Future capabilities

After the establishment of all the eight university libraries, campus network and adjoining city network, one powerful hub at state capital or at INFLIBNET centre will be established at Ahmedabad. All the eight university libraries campus and city networks will be linked with the powerful hub located in the state capital with strong linkages with INFLIBNET Centre. Through the state capital, all the eight university libraries can transfer and exchange their information. It will be very easy to interchange their data with the advancement in the field of communication, a stage may arrive where the powerful hub-as state capital may not necessary. Each university then may develop linkages without the aid of state capital hub and exchange information with other libraries directly.

To day we live in a world of instant globle communication. It is an era as pointed out earlier of fast technological development and information technology. The university librarians have an important role in collecting information and made it available to users, not only of the academic institution but to the other users of the society. It is a social obligation that to librarians have to perform. It becomes an obligation to introduce changes in the working of the libraries and to offer instant access to information and for its exploitation. The university librarians of the eight universities of Gujarat State will have to shoulder their social responsibility by modernizing library activities and to introduce networking facilities within the campus and outside as pointed by Dr. R. A. Mashalkar mentioned above.

If this is done the Gujarat State Academic library system would play very important role in the field of information and information access and it will serve as a model for other university libraries to follow.

References:
8. Tyagi, Anil K., Planning and Management of Local Area Network in Delhi University Library, In : Information Services in Networked environment in India, ed. by Vengan and others, CALIBER-2000, Ahmedabad, INFLIBNET Centre, 2000