CHAPTER VI

COMPUTERIZED GOVERNMENT INFORMATION SYSTEM:
AN OVERVIEW
6.1 INTRODUCTION

This Chapter is intended to examine the possibility and feasibility of providing computerised government information system. When the respondents of Rayalaseema region of Andhra Pradesh were asked to give their opinion on the need for computerised government information retrieval, a large number of them (79.18%) expressed their willingness to use the computers for information search for their day-to-day requirements.

Planning of computerised information system for public is utmost necessary in order to provide nascent government information and to provide access to National and International government information data bases. Both aspects are taken due consideration in planning government information system.

By the time, information is available in print, most of the information becomes outdated. With the growing demand for government information and increase in the information that need to be collected, processed and communicated to the right users, it becomes necessary that we in India have to adopt the latest Information Technologies such as computerised information storage, on-line interactive search techniques etc.

Computerisation is the necessity of the day and efficient workable and cost effective government information system is of prime concern, which is required to be paid much needed attention. Greater utilisation of existing information handling technologies will enhance physical and bibliographic access to government documents.
6.2 INFORMATION TECHNOLOGY

We are experiencing now what may be termed as the 'push of technology' and its impact on every facet of information handling. The advent of digital computer, the advancement in the telecommunication and storage and display technologies have opened up new possibilities in dealing with problems arising from collecting, organising and disseminating a vast amount of information.

Information Technology (IT) can be defined as those processes and technologies which are used in acquisition and dissemination of information based on some electronic technology.

Information Technology is suggested in the context of the S.R.Ranganathan's fourth law of Library Science - "save the time and reader/staff" in which Dr.S.R. Ranganathan recognised an objective relating to the internal efficiency of the library1.

6.2.1 Reasons for Adoption of Information Technology:

The main reasons for adoption of IT are:

6.2.1.1 Information Explosion

The exponential growth of information in every field of knowledge and its processing and dissemination without computers is difficult for one to handle such a large amount of information.

6.2.1.2 Availability of Information in Machine Readable form:

Some records are available only in this form. Due to advances in telecommunication, it would be possible to have access to such database.

6.2.1.3 Multi-use of Machine Readable Records:

These records may be used by many users for any number of times for various purposes like selecting and searching for acquisition, creating/updating the accession list, cataloguing, creating a database for circulation control etc.\(^2\)

Thus Information Technology can be used in libraries and information centres for three main purposes:

- Supporting clerical functions associated with technical processing and circulation work (Library Automation)
- Supporting information storage, retrieval and dissemination systems.
- Supporting "Management Information Services" for librarians, especially analysing library statistics (Brown 1982).\(^3\)

Libraries are the light houses for information in the field of research. The thirst of knowledge is increasing everyday at various levels on various subjects. Hence,


The application of Information Technology in specific library operations is very much needed for the following reasons.

- to provide efficient, speedy and accurate services,
- to control the rapid growth of information,
- to enable new information services,
- to facilitate co-operation and co-ordination in information system and
- to accommodate increased work load.

6.2.2 Use of Information Technology in Specific Library Operations

6.2.2.1 House Keeping Activities

Automation can be applied in the libraries in the areas of acquisition, circulation, cataloguing etc. Computer is the main tool for achieving automation in libraries.

6.2.2.2 Storage and Information Retrieval

Data processing or computerisation can also be used for information retrieval. Computers also help in compiling bibliographies and also in providing documentation services. The technologies that are used for storage and information retrieval are as follows.

1. CD-ROM Technology
2. Artificial Intelligence and Expert Systems for Online Search
3. Hyper Text and Hypermedia
I. CD-ROM Technology

Subscribing to CD-ROMs in large libraries saves not only the space problem but also not working of CD-ROMs which provide advantages such as easy access to a range of CD-ROMs, access from the user's own work station, simultaneous access by several users to the same database and better security. CD-ROM also serves as an aid to learning, teaching and improving key board skills, computer literacy and general search confidence among library staff and end-users.

Characteristics of CD-ROM Disc:

A CD-ROM disc (12 cm diameter) can store 600 MB of data which is equal to
- 2,75,000 pages of text or
- 1500 floppies (5.25 "DD - DS discs) or
- 9000 pages of graphic and 8 bit stereo audio or
- 18000 pages of computer graphics or
- 4,500 hours of digitized voice (16 KB) or
- 10 copies of commonly used 20 volume encyclopedia.

CD-ROM products generally present more current information than print sources do but less current than on-line sources.

The West has already made heavy use of this technology both for reference service and collection development because of ease of use and affordability. Time is not far away that reference librarian will spend more time at the computer terminal than at the reference desk.
Many surveys were conducted in the West about use and acceptance of CD-ROM databases by the end users and the results are overwhelmingly favourable to use the CD-ROM database. Most surveys found high degree of user satisfaction and their preference to search with CD-ROM rather than print indexes.

Boeuan (1994) provides a general look at the use of CD-ROMs in libraries in late 1993 and sees CD-ROM as a replacement for some printed material rather than as a competitor to other forms of electronic information.

Cox (1994) describes that CD-ROM is now perceived as an essential information retrieval tool in many libraries and is a "qualified success" as it provides a cost effective means of bringing computerised literature searching to library users. The fact is that CD-ROM technology will not replace the existing technologies like paper media, micro forms, magnetic and on-line media, rather it will supplement them. When advantages like space saving and faster random access to information are concerned, the use of CD-ROM will not be costly for libraries.

2. Artificial Intelligence and Expert Systems for Online Search

Artificial intelligence can be referred to the capacity of machine for achieving aims that would require intelligence if the work is carried out by man.


Expert systems are the leading edge of the information technologies and their development is an outgrowth of the Artificial Intelligence Research.

An expert system is a software package that enables a computer to act as a consultant in a specialised area of knowledge.

A complete expert system package includes two primary components.

- A knowledge base that may be filled with facts and general rules.
- An expert System Shell that can probe the knowledge base to reach the conclusions and recommend solutions to specific problems.

3. Hyper text and Hyper media:

Hyper Text is a means of organizing and providing access to knowledge. It is a particular form of non-linear writing. It provides linkages between different but related ideas and expansions of text.

Hyper Media includes apart from narrative text, animation, electronic models, moving pictures and sound. It is a form of access that can overcome some of the disadvantages of Boolean Searching.

6.2.2.3 Copying and Communications

The improvement in copying techniques, especially the use of electro static processes, particularly xerography has helped to raise the level of library services.

Improvements in communication methods, particularly the use of Telex, Fax, E-mail, Telefascimile have made it possible for the faster dissemination of information.
6.2.2.3.1 E-Mail

It is a combination of print and electronic transmission of information. It is very useful in document supply (electronic ordering, acquisition etc.) and in reference service.

6.2.2.3.2 Telefascimile in Libraries:

It is an ideal technology for any library. It is a device that instantly sends a replica of a printed page complete with text and graphics to any other facsimile machine that can be reached by conventional telephone service. In library it can be used for document delivery, library correspondence and also for reference service.

6.2.2.4 Net Working:

A network is a method of connecting two or more computers together in order to allow them to share resources such as printers, application software or CD-ROM drives. The terms network, Local Area Network (LAN) and Wide Area Network (WAN) are becoming difficult to define with advances in technology. Generally, a LAN refers to linking workstations within a single building, whereas a WAN links workstations together which may or which may not be in close proximity. New and value-added services such as voice mail, electronic mail, video text, audio-video conferencing and cellular radio, mobile telephone services etc. contribute more for the optimum utilisation of the network.

In India more than 180 universities and over 6000 colleges use the library services for their academic and research activities and depend on the resources available in their libraries. Currently the technical, scientific and management institute
libraries are functioning in isolation and there is no mechanism for the dissemination of valuable information available in these institutes.

Library network system will enable the universities and the higher learning institutes to share and electronically transmit the information resources among them. The information sharing through computer networks and document delivery in the form of electronic media are helpful to the research scholars and the teaching faculties.

Networking of various computer systems in the government information sector is another essential task which has to be undertaken and completed in the immediate future. Then a user in one work can have timely and convenient access to the data he needs to complete his interpretation and evaluation of possibilities, irrespective of where data actually resides.

INTERNET is the example of networking.

6.2.2.4.1 Internet

Some respondents felt that Internet Information service should be provided within the government information departments.

Internet is a network of networks spread worldwide. It is referred to as the information superhighway, cyberspace, the global information infrastructure etc (Fig. 6.1). It is open, non-proprietary, computer communication infrastructure of the world. All that is needed to send mail to any one else on the Internet is their mail address (In RFC 822 format) and access to mail system connected to the Internet.
Fig. 6.1: The global digital library environment
We are in the age of electronic communication where having an E-mail address on the business card is becoming a necessity like telephone and fax numbers. On the Internet one can communicate with around 50 million users worldwide, population which is doubling each year. In this 1.77 million host computers are linked. Every 10 minutes, a new host of computer is added.

The Internet was born in 1969, out of an effort to connect together a US Defence Department network called ARPANET (Advanced Research Projects Agency Network), linking four communication hosts IMPS (Interface Message Processors), in such a fashion which would ensure that even if one host fails or gets bombed out, communication would route around the unaffected area and stay alive. In 1974, ARPANET allowed International bodies to link to this network by releasing TCP/IP. ARPANET finally retired in 1990, supplanted by National Science Foundation (NSF). In the same year, NSF created the Advanced Network Series (ANS). This backbone became the NSFNET with more than 5 million hosts covering 20 per cent of Internet outside USA.6

Through Internet one can access information available in U.S. Library of Congress. The Internet user can also send E-mail to various places, access remote servers and download data and software from remote hosts. Through Internet one can also have access to electronic journals, bibliographic and full-text resources and to answer the reference questions. User on this global network can exchange electronic

mail with one another, with messages delivered instantaneously in many cases or in a few seconds or minutes.

Any one with Internet connection can have an E-mail address. Students and researchers may not be restricted by what is available in the next-door library. Vast databases can be accessed through a few stokes. If you are caught with a problem, put up your question on the net, someone would come up and share his knowledge. Electronic journals would get published. Companies can publish their product catalogues and book orders through the Internet. Eventually everything we do, may have something to do with the Internet.

The Internet offers possibilities for interaction not available through any other technology. A librarian can take advantage of materials that may be physically located thousands of kilometres away. It can decrease demands of distance and time and bring intellectual and physical resources.

Netscape is a software browser that helps users to navigate the world wide web. The World Wide Web (WWW) is an electronic information delivery tool for the Internet originally created by CERN (European Laboratory for Particle Physics) which makes use of Hyper text and Hypermedia techniques. Another browser called


"Explorer" manufactured by Microsoft is also available. Videk Sanchar Nigam Ltd. (VSNL) has done a great service now by opening its Gateway Internet Access Service (GIAS) in August 1995 to make the NET instantly accessible by anyone who has a computer, modem and a telephone connection.

**Internet Library networks system proposals:**

The Internet Library Network with reference to Indian Environment may have the following proposals.

- To establish the core facilities of e-mail for communication among Indian Library Networks and generation of user services.

- To acquire and install the necessary hardware and software for the access of international databases through Internet.

- To provide and share the information among the experts of Indian and Internet users community around the world.

In India, access to Internet libraries is possible through ERNET, and VSNL and NICNET (RENNIC).

Internet based resources and services are very valuable particularly for the developing countries since the printed sources of information are not easily available in time from the developed countries. Internet services and access to it should be fully exploited to integrate the network-based resources and services by the Indian Users Community. Internet services can be used effectively for library applications.

---

by downloading the information from remote databases. More workshops, seminars, and short term training courses are required to develop and promote the Internet services in India. Currently every library lacks funds and resources sharing among the libraries is the only answer. LAN, WAN & Internet connectivity will improve this situation to a great extent. Special concessions and permission to be given to the Indian libraries to establish and connect to Internet services.

Mr. Bill Gates, Chairman and CEO of Microsoft visited India on Fourth of March, 1997\(^1\). Mr. Gates, who made the Internet a reality by increasing its reach, said India was lagging as far as hardware was concerned, against 329 Pcs per 1000 people in U.S. India now has just 1 PC per 1000 people. According to him, a stage will come when computer literacy will be viewed as literacy.

At a conference organised by the National Association of Software and Service Companies (NASSCOM), Mr. Gates showed how the evolution of windows platform had positively impacted on the industry over the years. He reiterated that windows would remain the best and most versatile platform for developers building applications for the PC networks, multimedia and the Internet.

Mr. Gates said that the most fundamental change in commerce and education in the last 50 years has been the Internet. According to him, the next step will be that

---

Internet will be used inside business. Every business process can be made dramatically more efficient with the Internet.

He said he intended to support Indian industry in developing software application in different local languages and narrow down the technological gap between urban and rural areas through satellite-based high-speed data system across the country.

The Internet and the World Wide Web (WWW) technologies are providing the technological environment and intellectual impetus for the development of 'digital libraries' - libraries without walls, with containerless data and ideas.

With the spread of the Internet, CD-ROM will have more effect. There are already examples of companies involved in the CD-ROM industry making their products available on the Internet. UMI, for instance, plans to duplicate its CD-ROMs and make both text and image database available on the Internet.

The entire information regarding Andhra Pradesh i.e., about the people, the culture, the tourist places, about the chief minister's program and the information about ministers, information about Government orders etc, are now available on Internet. The command to get this information on Internet is http://www.andhra.pradesh.com. This information will be updated once in a month.

---

Very High Speed Backbone Network System (VBNS):

It will take only a few minutes to download any information in the Internet. But Aliver Meek Brion of University of Colorado has measured that it will take at least a hundred days to download a simulation required by them. If it takes this much of time only for downloading, it will take more time to work on it. In order to overcome this problem they have prepared ‘Scientists - only computer network’. It is called as Very High Speed Backbone Network System (VBNS) (Fig.6.2). It works 21 thousand times speedier than a modem. Within this VBNS Network we can transmit twice in a day all the information available in all the documents of Library of Congress. If we want to do it in Internet it will take a month. But there may not be any chance to general public to have an access in VBNS. But Governments and Universities in U.S.A. are already taking interest in VBNS. They have arranged this VBNS network as a 22,400 Km. Fibre optic loop, linking five Super Computer Centres in San Diego, Boulder (Colorado), Arbara (Pittsburgh), Ithoka (New York) of U.S.A.12

6.3 NEED FOR GOVERNMENT INFORMATION NETWORK

6.3.1 Information Explosion

Government information is generated at various levels all over the country and also at many points in the world. From the point of generation, the knowledge is recorded and communicated within the organisation and outside it through a variety of communication channels. Then the output of literature as a whole is increasing exponentially.

6.3.2 Access to Government Information

Access to government information at the right time, to the right person in a most convenient form preferred by the user can help to minimise the wastage of resources.

6.3.3 Inadequacy of Existing Information Systems

Since the system meets only certain limited ends within a particular agency or establishment related to the area, the process of storage, retrieval and dissemination of information have been geared to the specific requirements of the organisation.

Thus, the importance of library and information network as a powerful national force is now being recognised by the Government, industry and education.

There is also great potential for investigating the feasibility of government information centres networking. A well defined experimental project could be thought of to network important libraries in a given region i.e., Rayalaseema Region of Andhra Pradesh, India. In such an experiment, each library will be linked to a central mainframe computer. Libraries in the network would access the computer using dial-up lines to create common database of their holdings. This database would be searchable by several parameters and could be used for shared cataloguing, acquisitions etc. An electronic mail system between the network of libraries could also be thought of to facilitate message transfer for eg. sharing of resources in order to avoid duplication, in providing more efficient services and the costs of networking.
The networking of government information system should also provide for:

- Co-operative acquisition
- Bibliographic searching
- Inter-library loan and document delivery capabilities
- Referral services
- Reciprocal borrowing privileges
- Resource sharing
- Storage/preservation of little used material

6.4 COMPUTERISED GOVERNMENT INFORMATION SYSTEM

An information system is an organization or network for the collection and distribution of information. A computerised government information system is a computerised network of government organizations and information centres where government information would be collected, processed and disseminated to the users of information.

6.5 NEED FOR COMPUTERIZED GOVERNMENT INFORMATION SYSTEM

6.5.1 Greater Time Available for Professional Activities

Many of the routine and repetitive jobs can be given to automated information processing.
6.5.2 Increased Reliance on External Collections

With technological access to a broad range of government information, "comprehensive collections will be neither necessary nor affordable".

6.5.3 Improved Public Services

Because many technical service activities can be automated or eliminated, professional librarians will be able to develop more and better programs for documents public services.

6.5.4 More Training and Technology - Related Skills Necessary

Librarians will have to be knowledgeable about the broad range of technologies as well as how they interact and how they can be applied for increased organizational effect.

6.5.5 Increased Integration

Depository collections can be better integrated into library information services and systems, encouraging increased access to government publications.

6.6 DEVELOPMENT OF COMPUTERISED GOVERNMENT INFORMATION SYSTEM

Computerised government information system can include bibliographic information, textual information, acquisitions information, circulation data, user information and a host of management information including budgets, personnel, inventories and more.
Computerised government information systems can be developed under any of the following approaches.

6.6.1 Purchase or Lease a Turn-key System

A turn-key system is one that is ready to be installed as a complete package by a contractor or vendor. Usually it is intended to address a specific function or area of functions, such as acquisitions, circulation and serials control.

6.6.2 Share an Automated System with another Library via a Network or through a Formal Co-operative Agreement

Such approaches rely on an on-line time sharing mode of operation, in which the libraries either share a basic system and apply it to meet their own purposes or actually input and manipulate the same primary database and supporting system software.

6.6.3 Modify a System from another Library

The library purchases programmes and appropriate hardware and adapts the programs to meet the specific needs and objectives of the library. Typically, the modifications are done on the software of the system to be adapted.

6.6.4 Piggy-back the System on to Existing and available Institutional Hardware and Software

This approach assumes that the library has access to institutional computer services - either the computer services of the university or local government. The document collection typically accepts some 'constraints' in the software rather than making significant changes.

6.6.5 Develop the System Locally

Here the information personnel perhaps with the assistance of a Library Systems Analyst, designs, programs, tests, de-bugs and implements the system. Although this approach allows for greater control over the system and insures its appropriateness for the local library, it assumes the availability of expert staff, significant time commitments and knowledge of sophisticated issues related to both equipment and programming.

6.7 TRENDS IN COMPUTERIZED GOVERNMENT INFORMATION SYSTEMS

6.7.1 Trends in India

With the advent of mini and micro computers in 1980's many research, academic and special libraries in India are engaged to switch over to computerisation.

Networking of libraries and information centres has also been initiated by the Government and also the commercial agencies. Some of the important networks that have been launched/being launched to make information available to the user community are:
NICNET  For Government Information - DOE
INDONET  A Commercial Network - CMC
VIKRAM  Packet Switched Public data Network - DOT
INFLIBNET  Information and Library Network - UGC

ERNET (Education & Research), RAILENT (Network for Railways), BANKNET (Network for Banks), OILNET (Network for Oil sectors), EDUNET (Network for Educational Institutions), TRANSNET (Network for Transport sector), COALNET (Network for Coal) are other important networks commissioned in India.

Inspite of all these, the government information in India has yet to gain momentum in its efforts towards achieving computerised information services.

The first step in this direction was initiated by the Government of India, the National Informatics Centre (Delhi) which is actively engaged in the development of the network NICNET. The network is mainly intended to provide computing and communication infrastructure to aid planning and monitoring schemes and decision making activities in the government as Central and State.

6.7.1.1 Infrastructure for Government Informatics Development

Government organisations use and generate information. Information is the essence of their existence. It is a fact that many government ministries/departments and organisations are not so careful about the collection, storage and retrieval of information. The realities are:
- Information collected by government organisations imposes a heavy cost on business.
- Information that is not available may cost a great deal of money.
- Information that is not used may lose a great deal of money.
- Information systems are today and for the foreseeable future a prerequisite for effective national development.

National Informatics Centre (NIC):

It is the nodal S&T organisation of Government of India, under the Planning Commission, to introduce Information Technology.

NIC has developed tools for Management Support (MS), Development Databases (DB), Knowledge Databases (KB), Decision Support System (DSS), Geographic Information System (GISNIC), fileless office concept, electronic mail services (NICMAIL) and tele-informatics services in the government at the Central, State and District level in the country. NIC has also developed, distributed and decentralised informatics and computer network for government management information system.

NICNET which is a satellite based computer communication network, established during the Seventh Five Year Plan Period (1985-90), provides informatics network facilities to the government administration for information technology implementation.
While NICNET makes use of the satellite communication (INSAT-ID) for long
distance links, terrestrial communication is used for short distance intra-city network
through leased telephone line or dial-up lines using Public Switched Telephone
Network (PSTN) for integration to NICNET.

In general, NICNET facilitates the Central Government as well as the State
Governments for
- Optimum utilisation of expensive computer resources,
- On-line retrieval of data,
- Sharing latest software tools,
- Emergency communication systems and
- Exchange of messages and information between Central Government, State
  Governments and districts.

6.7.2 On-line Bibliographic Database Searching for Government Publications

Access to on-line bibliographic data bases containing primarily government
publications has increased significantly since 1978 due to the number of databases that
have been made available through Lockheed DIALOG, Systems Development
Corporation ORBIT, and BRS.14

On-line searching of government documents databases is needed for the
following reasons.

- It provides increased access to specific types of government publications not indexed elsewhere.

- Reduces the time lag between availability of the document and its bibliographic access.

- Reduces expenses by not having to purchase numerous hardcopy indexes

- Reduces the time needed for actual searching and increase search strategies.

However, the financial constraints i.e., on-line search costs, staff training, limited access to technology utilisation information and resistance to technological innovation are the basic constraints/drawbacks in the application of this technology to government document collection.

In each of these areas, information personnel can develop strategies to minimize the impact of these constraints.

- Rapidly declining prices in the computer equipment on-line search

- Training is easily available

- Clear demonstration of benefits resulting from technology applications will allow librarians to learn from one another.

6.7.2.2 Software Packages

DATATRIEVE is the package, being used by Pikes Peak Library District and Carleton College. It is produced by Digital Equipment Corporation. It is interactive,
It not only stores and manipulates data but produces reports that can be formulated to specific library requirements.\textsuperscript{15}

EXECUCOM is another package. It is an interactive Financial Planning System produced by EXECUCOM Systems Corporation. An excellent user's manual is available describing the system. Heindel and Napier (1981) have described one use of the EXECUCOM package in a special library environment which has applications for government publications collections \textsuperscript{16}.

6.7.2.3 OCLC (On-Line Computer Library Centre)

Formerly it was known as Ohio College Library Centre. Since 1976 OCLC has a loaded the government publications listed in the monthly catalog. With the Government Printing Office issuing 15,866 hardcopy titles and 27,976 microfiche titles in 1982 alone, many libraries are now considering OCLC as the primary bibliographic source for the processing of documents.

One of the most significant enhancements to OCLC, in terms of accessing government publications, was the 1980 implication of the '088' Government Document search key.


Wallbridge (1982) has summarized the applications of OCLC for government documents technological processing.  

Cataloguing sub system: Produce complete sets of catalogue cards for government publications included in the database.

Serials control: Identify and produce bibliographic records of serials included in the database.

Public access: Availability of public access OCLC terminals can directly support bibliographic access and identification of government publications.

On-line access: Librarians can immediately obtain bibliographic information regarding any document included in the database.

Acquisitions: Ordering and accounting of materials other than government publications may be used in support of a government publications collection.

OCLC has provided enhancements that address the unique needs of government publications, but much is still to be done.

6.8 DESIGN OF NETWORK OF GOVERNMENT INFORMATION

Design and development of National Network of Government Information requires enormous finance, careful planning, technical support and time bound

programmes to achieve the target. In developing countries like India, government information is essential for public for their day to day activities.

6.8.1 Collection of Information About the Problems

All possible authentic information produced by the government should be collected.

To achieve the goal 'Government Information for all' there is a need for an up-to-date national network of information system to keep pace with the technological advancements. It consists of:

- Collection
- Processing
- Storage
- Retrieval and
- Dissemination/Display of Information

6.8.2 National Network of Government Information System

A good Government Information System provides data for monitoring and evaluating of government programmes and gives the requisite feedback to government administrators and planners at all levels.

To achieve the target 'Government Information to All' it is absolutely essential to establish well-planned government information centres from village level to national level.
To get flow of information from village level to national level, there should be an apex body at the top to guide, control and administer all the Regional Libraries to serve the requirements. Therefore, it is suggested that legal status should be given to one National Repository for government publications and provision should be made for:

- any information generated by the government published in India: a copy should be given to the national repository library for government publications.
- any conference, seminar, symposium, workshop, research papers or any publication in the government information field: a copy of the same should be given to the national repository.

6.8.3 Pre-requisites for Generating Computer Based Information Services

The essential pre-requisites for generating computer-based information services are:

- Design and development of bibliographic databases, users' interest profiles etc.
- Procurement of available machine-readable databases (CD-ROMs)
- On-line access to international database hosts, such as DIALOG, DATA-STAR.

6.8.4 Selection of Hardware

The UNIX 486 compatible systems with UNIX as operating system would permit both standardisation as well as access to a wide range of popular software.
6.8.5 Software Environment

Packages should be user-friendly and easy for modification to meet local needs.

The free query system should also be added to village database.

The selection of hardware and software should be done on the basis of the following parameters:\textsuperscript{18}
- Needs of the user
- User's adoptability and learning
- Projected load of data processing
- Available maintenance support
- Future upgradation adaptability
- Cost and benefit analysis
- Availability of computer manpower

Choice of Software:

1. Ability to handle bibliographic data requirements
2. Ability to interface with other software
3. Capability with operating system
4. Flexibility to introduce user defined formats
5. User friendliness, Help screens
6. Indexing capability

6.9 PROBLEMS IN COMPUTERIZATION

Some of the typical problems faced in the matter of computerisation are:

- Training and updating of manpower on a regular basis to develop a positive attitude towards the usage of computers in day-to-day working.

- Timely updating and discontinuation of manual system are delayed due to the inherent fear of the failure of computerised system and breakdown.

- Maintenance of hardware in the field. There are problems in getting uninterrupted power supply at the lower level which interferes with the smooth functioning of the computerised system.\(^{19}\).

In the context of government information computerisation, the following of system design considerations would be necessary:

- The users are going to be professional/non-professional first timers.

- Primary focus on database requires to be established.

Training

Once the basic system design and software package has been developed and field tested, training for users has to be initiated.

If any information system meets users' requirements with simple operations logistics, it can be called a successful one. It should have the flexibility for future adaptations in terms of either technology or scheme logistics.

Government information should not remain a dream. It should become a fact of life. To achieve the goal, it requires vast financial and technical support and legal status from the government as well as from the people.

The dramatic reduction of costs in information storage, communication and processing was made possible by developments in microelectronics. State Government should take advantage of new technology to improve their access to information and ultimately their decision making abilities.

A developing country like India is still to feel the true impact of Information Technology products and services. However, in the West, the new technology has invaded the home, school, office, factory, banks, shops, market place and of course of the library.