CHAPTER: 6

THE NETWORK STRUCTURE
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The ability to store, manipulate, transfer among other things has lead to the creation of "networks". It is in response to the development and advancement in communication technology [304]. A library network has four elements:

[a] A point of access for users;
[b] A database which includes books, periodicals and other reading materials in traditional forms and in computers- disks or tapes;
[c] A system of communication with staff, ILL; and
[d] Contractual basis for administration, management and finance.

The major concern here is to transfer information efficiently and promptly to the patient care setting, and for education. With respect to physical access to reading materials, the network concept offers more immediate promise. The Georgia Interactive Network for Medical Information [GaIN] has been established around five principles [313]:

01. To provide medical information at State level;
02. Many functions of network system are distributed throughout the network rather than being centralized; This approach is
logical and cost effective;

03. Service to rural areas;

04. Traditional model of network adopted by US NLM is a controlled pyramid of communication channel with local libraries resources at the base; RLs at the middle and the NLM at the apex. GaNI incorporates the strength of this model while also responding to new demands in the market place by providing information services directly to end users;

05. Significant financial commitments are made by local agencies. The cost of network is totally supported by membership and medical school. Fees structure is based on bed capacity of the hospital.

The concept of network is not new but has become the essence of operations and working of modern libraries, information centers and their services. Despite almost universal agreement that library networks are absolute and desirable, most observers admit that these are still in their infancy. However, the enormous information requirements of the health professionals are likely to be met only through the
application of network concept in all its ramifications in Karnataka.

The library networks deal with the housekeeping aspect of the process [253]. The studies in library networks have shown that ordinary library housekeeping can be conducted cooperatively preserving intellectual interests of individual libraries. In recent years, network have taken a new urgency, as individual libraries have become less and less sufficient. This is because the resources needed to acquire most of the wanted materials are no longer available making the local collection inadequate to meet the rightful demands of readers. The libraries form network to achieve sharing of enormous resources. Cooperation and sharing of recourses through the facility, including a need to develop a philosophical framework in which all members of the facility participate, has become an essential ingredient in a coherent regional, national as well as international network system.

Extensive investments in hard and software and systems development have laid foundations on which the networks are built. The crucial importance of such a base to an organization such as a hospital, a medical or health school or college, or a health care institution is no longer in question. The networks have come to be regarded as the inevitable solution to cope with the complex situations [311].
and these demand an attempt to enhance the motivation of user
groups [214].

The networks are necessary because the environment in
which the libraries functions have changed. The networks
increase interlibrary dependance and changes not only in the
administrative responsibilities, but the very functions of
libraries. These demand acceptance of protocols or rules over
which librarians, as individuals, have little controls and
require acceptance of new kind of communication
responsibilities that are different from simple cooperative
agreements.

The networks are sophisticated and complex. There will be
tension among libraries over status authority and
responsibility in governing the networks. A new professional
"the Network Manager" will replace the librarian terminology
[304]. The inter institutional barriers must essentially be
removed such as the change of inter-agency, political
conditions, and replace with new structures.

Four types of network models are described.

01. Hierarchical;
02. Star;
03. Hub and Rim;
04. Distributed;
06. 1. 1 Hierarchical:

With various libraries in order of subordination participate. The best example is the public libraries—where the State Library is on the helm of the affairs [Fig. 25].

06. 1. 2 Star:

The principle library will be the National Library, which will mainly be concerned with providing services to other libraries no greater degree of authority over the other libraries, but still with a high degree of ascendancy [Fig. 26].

06. 1. 3 Hub and Rim:

This is just like a Star network. It can be "filled in" by providing direct non hierarchical link between the service points to create a "Hub and Rim" [Fig. 27].

06. 1. 4 Distributed:

In this type of network, all libraries relate directly to one another where central dominance is wholly replaced by participative coordination [Fig. 28].

In this type, libraries are not of equal size or scope of service. The large centers will have to carry on certain functions essential and their administration will require special skills. There is functional equality between the participating libraries. The document delivery will thus become more simple and efficient.
HIERARCHICAL NETWORK
(Example: Public Libraries)

STATE LIBRARY

FIG: 25
This model is extremely flexible. It encourages each library the minimum initiative and responsiveness to local user needs while responding interdependence of libraries. The Distributed Network provides coordination without subordination. Its most serious difficulty comes in the management of relationship between libraries which has to be tackled.

06. 2 KARNATAKA: Understanding the Need for Network:

Do the health sciences libraries, librarians, health professionals and health care institutions in the state realize the urgency, necessity and usefulness of such a facility? The importance of library network and its total impact of library services and professionals can not be over emphasized. A few health professionals and librarians have tried long and tiring times without improved library services. It is essential that a well established, conducted and managed library network be planned to successfully disseminate and provide effective document delivery and information to the entire user community. An establishment of such a facility will effect the library services and use of reading materials which will in turn benefit health education programs and the delivery of health care in the communities of Karnataka. The research certainly shows that librarians are ready for
cooperative efforts through a very well developed, organized and managed Health Sciences Library Network in the State. Presently the health sciences libraries utilize to the minimum, the Indian National Scientific Documentation Center [INSDOC] which has been supplying copies of articles from several periodicals on fee-for-services basis. It does avail the collection of libraries throughout India through several of its regional centers for supplying copies. Through its dedicated services, the INSDOC has helped needy Indian libraries, including those in Karnataka and the users to meet their information needs to a limited extent. Experience has revealed that the National Medical Library in New Delhi [NML], does on a very irregular and slow basis provides copies of articles. Frankly there is a need for a systematic facility to help meet demands from users for health information to the fullest possible extent in Karnataka. These also have approached the US National Library of Medicine [NLM] for their ILL requirements on a limited basis and occasionally. The NML, New Delhi has not lead Indian libraries in cooperative efforts among one another and share resources; it has functioned more or less as a local library extending only limited services. The librarians feel that there should be some mechanisms on which they can depend for copies of articles and or documents which they could avail on ILL basis. A few libraries have been
utilizing the World Health Organization, [WHO] Geneva library and its branches for ILL services. The US NLM which had a contractual agreement with the WHO library to provide free ILL to the libraries of the developing nations, have to a great extent discontinued effective November 01, 1985 this service and has now commenced charging a sum of US $9 for an article of one-half page to over 50 pages. It is still possible to avail the ILL from US NLM through WHO which will arrange a 50% discount to selected health sciences libraries. For this, a health sciences library must approach its Regional WHO office. It means that Indian health sciences libraries must be prepared to pay on 50% basis a sum of Rs.75 on an average per article. There is an instance where the Eastern Mediterranean Regional Office of the WHO has arranged a 50% discount on the ILL copies for a library [291].

The WHO library is a "Working" and "No Growth" library and therefore the collection is weeded out regularly. This library responds specifically to requests from its staff, Expert Committee and, Governing body members, etc. Only limited library services are provided as an International backup to needy health sciences libraries around the world [327]. The collection of the WHO library is concerned with public health, sanitation, socio-economic and curative aspect of health and the materials published in the developed
countries is not said to be relevant to other parts of the world.

What remains to be seen is whether the WHO and the US NLM will succeed in signing yet another contractual agreement which will help immensely the health sciences libraries of the developing nations. It is nearly six years since suspension of provision of free photocopies to the health sciences libraries in the developing countries, and so far there is no progress towards reinstatement of the previous policy.

Even with this great concession offered by WHO for its regional libraries, it is beyond imagination that any health profession will come forward for any ILL request for a copy of an article which might be available somewhere in the state of the nation.

In 1984 the US NLM filled 1730 requests from 179 Indian Health Sciences periodical titles received on an ILL basis from libraries around the World. It was among the top ten countries from where the US NLM obtained ILL [221]. This is the result of the inclusion of these 179 selected Indian periodicals. It seems that the literature and reports published in Indian periodicals has great impact on the International biomedical and health community. If more periodicals are included in Index Medicus, MEDLARS or MEDLINE, there is a possibility that India might contribute effectively
in the advancement of medicine. What then will be required is the improvement in the standards of some of the periodicals—both content, format and presentation.

It’s become imperative that the libraries of India must form a network and resource sharing facility. The NML has thus far failed to realize the importance of such a facility. The Medical Library Association of India along with the National Medical Library, New Delhi and the Indian Council of Medical Research established a National Task Force in 1983 to improve the health sciences libraries in the nation and to establish network of Health Sciences Literature and Libraries [HELLIS]. According to its plans, some Regional Medical Libraries must have had established in 1986. It is the middle of 1991 now and there is no news about any of the proposed programs. Our NML has thus far has proved to be a paper tiger and has not taken suitable steps to accomplish its established goals and objectives among which is an establishment of a network for the nation. The need for the Networking is there, but has not been realized as yet. Therefore it becomes crucial and critical that at least the state libraries come together and form a network facility thereby sharing enormous resources. Perhaps the State Health Sciences Library Network, might give an idea to the NML in particular and to other states in the nation in general. Establishment of such state-wide networks
will ease the burden on the NML and at proper time, all the state networks could be amalgamate with National Network in the Health Sciences Libraries.

06. 2. 1 Financial Resources For Network:

The library is one of the noble institutions of all and there could never an expenditure more meaningful than towards its operation. These have been granted the least priorities in the matter of budget allotment. These are however, first to suffer any budgetary cuts. The network concept requires understanding and commitment of huge resources—financial and others. It therefore becomes essential that the financial support towards its operation is provided through a Legislative process similar to that of US National Library of Medicine Assistance Act of 1965. The provision will facilitate and guarantees uninterrupted operation, its management and of providing effective delivery of health information.

In the 20th century, libraries both in the developed and developing nations are providing free access to services. The economic realities have changed and as such that the libraries can not recover at least some portion of cost of providing expensive and sophisticated services, and these are not likely to continue to provide these services free for a long time. It therefore becomes necessary, against the wills of few colleagues and peers, that a fee is levied in providing
sophisticated services for health professionals. The future source of funding in part will have to be through the fee-for-service basis. This has to be a channel for future, where the entire user community realizes importance and value of a network and its activities in the total educational processes and health care mechanisms. Once the users are satisfied that the existence of network has helped them immensely to access health information with the least possible delays, and has contributed effectively in their education and practice, they would be willing to support its operation financially by accepting the fee structure. Immediate implementation of a fee structure would jeopardize and harm the entire operation and even the existence of network facility in the State.

The funds also will be sought from the Central Government, Ministry of Health both State and Central, University Grants Commission, Indian Medical Council, Indian Council of Medical Research and the management of the Private Medical Colleges. A percentage from either the capitation fee or the annual fee from the medical students at the time of admission shall have to be collected towards the health sciences libraries. A library fee, same as a Cess in State Public Library system shall have to be collected each semester from each student.
In addition to this fee, a percentage will need to be collected on the strength of the total admission to each medical college—graduate and undergraduate from the management of the private medical colleges, and the Directorate of Medical Education for the government medical colleges. Since the entire aim of the network is to provide improved, qualitative and timely information to all health care professionals in the state, there is a justification for the funding to be channelized through the legislative process.

In addition, the private philanthropic organization, drug companies and state associations, etc. will have to be approached for additional funding. It will also be advisable to approach international agencies such as WHO, Rockefeller Foundation, the United States Development Fund, etc. and explore the further funding of the facility. The US National Library of Medicine will be an additional source of income if proper justification and proposal is submitted.

Each private physician will need services of a library, which must have to be provided on Fee-for-service basis and it will be also an additional source of income. A fee structure for membership to the health sciences libraries by private hospitals, clinics and physicians will help augment the funds required for the operation of the Network facility. This fee structure has to be on the basis of Beds in the Hospital for
clinics; and either one-time service fee for physicians on a monthly basis or against services provided whenever they approach libraries for information.

The funds will be distributed as per the formulae which will have to be developed with the assistance and input of RHLs, their needs, medical educators, etc.

All health sciences libraries will also be provided financial assistance from the Regional Network Authority.

**06. 2. 2 Network Management:**

Management is an objective function and ought to, therefore be, grounded in the responsibility for performance; it is also a professional and is function, a discipline and a task to be done [111]. The network management requires a general direction. It poses fascinating problems of managing people and resources both in the individual libraries and the network facility. It requires informed decision making body and therefore those charged with the operation of the Regional networking must have knowledge, insight, technical know-how and administrative capabilities. The management should provide an administrative structure and a decision making process which would be responsive to the needs of the entire community [294]. The forces of centralization and decentralization of governments play a vital role in the manner in which a state or a nation approaches establishment of network facility.
Therefore the management of this facility must vest in a board which will include members from all walks of life. The board must include medical educators, physicians, health care administrators, public figures, politician, and representatives of government. Inclusion of physician is recommended while seeking legislation of network since the politicians listen to them intently [365]. It would thus be easier to legislate funding for the network through an educated and an influential politician and a physician on board.

The important aspect of the management would be negotiating of mutually accepted goals wherever possible. Management of networks requires making the work productive which includes four activities:

[a] **Analysis**: One has to know the specific operations needed for work, their sequence and their requirements;

[b] **Synthesis**: The individual operations have to be brought together into a process of production;

[c] **Control or Direction**: Should be of quality and quantity of standards and of expectations; and

[d] **Appropriate Tools**: Skills, Information,
Knowledge and experience.

Analysis consists of essentially of the following four aspects:

[a] Identification of all operations necessary to produce a known end product, a known piece of work;

[b] Rational organization of sequence of operation so as to make possible the easiest, smoothest and most economical flow of work;

[c] Analysis of each individual operation and its redesign for its most efficient performance— including provision of appropriate tools— needed information and required materials where and when needed;

[d] Integration of these operations into individual task.

The proper management requires a balanced stress on objectives, especially by top management. The goals of librarian’s task must be designed by the contribution he/she has to make to the success of the parent institution. Therefore the greatest advantage of the Management-By-Objectives [MBO] is perhaps that it makes possible for a librarian to control his/her own performance. MBO is a
planning technique, which is the most popular today for working with the staff. In MBO, a librarian consults with each staff to determine his/her objectives and to settle on a time period usually a year, during which the objectives must be met. The MBO leads to a contract between supervisor and his/her subordinate staff, which may be used for performance evaluation. Self control means stronger motivation; a desire to do the best rather than do just enough to get by. It means higher performance goals and broader vision. The librarian must have the information needed to measure self performance and should receive it soon enough to make any changes necessary for the desired results and this information should go to the librarian and not to the supervisor.

The new ability to product measuring information will make effective self control, and if so used, will lead to tremendous advances in the effectiveness and performance management.

The impact of a free and independent Board of Directors upon the Network’s management would be profound and its ultimate effect upon the productivity would be enormous. It has to be however, free from governmental or political interference for the smooth management and operation.

The Government library networks are derived from Statutory mandate by central, state or local bodies. for e.g.
New York State Interlibrary Loan Network [NYSILL] which is governed by the State Library; Minnesota Interlibrary Telecommunication Exchange [MINITEX] is one of several programs under the Minnesota Higher Education Coordinating Board, a State Agency created by a Statute in 1965. New England Library Network [NELINET] derives its authority from the New England Board of Higher Education- a quasi-government body formed by six different states [63]. On the same lines, the Karnataka State Legislative Assembly could authorize through either the Ministry or a Board or Corporation, the establishment of Health Sciences Library Network.

Since the management plays an extremely important role in such a facility, it is bound to effect the way each member libraries function under the management. It is helpful if a board is nominated consisting of:

- Physicians 02
- Dean College of Pharmacy 01
- Health care Administrator 01
- Principal, Medical College 02
- Librarians 04
- Government Representative 01
- Politician 01
- President of the Private Medical College Association 01
The appointment of physician must be based on the merit of the individual. The requirement shall be that the individual selected to serve on the board must be lover of books and is aware of the importance of health information to the medical education, self advancement and for improved patient care.

The selection of Deans of Pharmacy, Medical College and the health care administrator must be left to the Directorate of Medical Education and Directorate of Health and Family Planning who in consultation with the Minister of Health in the State appoints the members.

The selection of three librarians is mandatory as the working of the network will be instituted on their knowledge and know how of the profession. It is recommended however that three librarians of the Regional Health Sciences Libraries out of the six will have to be selected for a term of three years; the other three will have to be nominated term-wise.

The nomination of a politician is mandatory to legislate required funding and regulation for the working of the network facility. An influential politician, while plays a constructive part in the management of the facility, his/her presence may mar the smooth working of the facility as the politicians are known to drag themselves in every thing either for appointments, or seeking favors.
The inclusion of the President of the Private Medical College Association in the state is one of the most important factor of the board. Since four of the five RHLs are the libraries of the private medical colleges, it will have added benefits to include the president to have consent of all private medical colleges.

The government representative may be either the Director of Medical Education or the Secretary, Ministry of Health of State. The presence of this representative is essential to regulate funds, approve procedures and directives. The State Medical Association plays a leading role in this aspect by adopting stringent rules and regulations by announcing mandatory CE requirements for physicians continued registration. A member nominated from the State Medical Association will be regular invitee for meetings of the Network Authority.

06.2.3 Manpower Development:

It is essential to have library staff trained in handling new technology before it is installed [155]. Keeping in view all personnel requirements for a Regional library network, a wide variety of specialists need to be trained to constitute the manpower service. These personnel will include, Health Sciences Librarians or the Professionals, Semi-professionals and RDA, or Technicians Nonprofessional or Support Staff and
Computer specialists who would share responsibilities of managing the network libraries.

The Regional Network Director who will foresee the operation of the facility and direct the working, must be someone with:

** A vision to take leadership and assemble a team of rehabilitative professionals;

** The power to communicate ideas that will help build a state-of-the-art facility which will be best in the profession;

** The ability to spring quickly to meet new challenges and reach higher level of professional status; and

** Strength to walk into an opportunity with high personal and financial reward.

The Regional Network Director must have control, which must satisfy the following seven specifications. It must be:

[a] **Economical**: Control is a principle of economy; the fewer controls needed the more efficient and effective they will be. The manager must ask "What is the minimum information needed to know to have control?". The answer surely varies for different managers.
[b] **Meaningful**: The events to be measured must be significant. Control be based on institution’s definition of its mission.

[c] **Appropriate**: This must be appropriate to the character and the nature of phenomena measured.

[d] **Congruent**: The measurement be congruent with the event measured. It is up to the Administrative Librarian to think through what kind of management is congruent to the phenomena, it is a mean’s to measure. The professional has to know when "approximate" is more accurate than a firm looking figure.

[e] **Timely**: The time dimension of control has to correspond to the time span of the even measured.

[f] **Simple**: It should be simple. Complicated controls do not work.

[g] **Operational**: It should be operational. It should be focused on action. Action rather than information is their purpose.

The Network Director has five basic functions:
Sets Objectives;
Organizes;
Motivates and Communicates;
Measures; and
Develops people/personnel including self.

Objectives: It is a problem of balance—balance between results and the realization of the principles one believes in; a balance between immediate and future needs; a balance between desirable and available means.

Organizing: It requires analytical ability. It demands that most economical use of scarce resources. It deal with human beings therefore stands under the principles of justice and requires integrity.

Motivation and Communication: Social needs are needed for motivating. The communication are needed instead of analysis, integration and synthesis.

Measurement: It requires analytical ability.

Personnel Development: Setting objectives and goals, organizing, motivating and communication, measuring and developing people are formal, classifying categories.

Any staff selected for the networking, must play a role as [259]:

...
An idea generator- someone who stimulates the team;

An entrepreneur- one who persuades others the importance of the project;

A project leader- who plans, organizes and move the work;

A gate-keeper- who serves as an internal information resource and possesses a high level of technical or professional competence in project areas; and

A sponsor- one who is often a senior professional, who facilitates and guides the work informally and buffers team in an organization.

The required manpower could be developed by:

01. **Formal Academic Programs:**
    B.Lib.Sc., M.Lib.Sc, M. Phil with specialization, and Ph.D

02. **Continuing Education:**
    ** Individual Development;
    ** In-house Training;
    ** Intensive Senior Executive Training;
    ** Workshops, Lectures, Seminars and Conferences, etc.
Among the mean requirement for professional, Master's degree in Library Science specifically with some specialization in health sciences librarianship must be considered as basic—the foundation on which other means should be built.

The management will be under the Regional Network Authority Board which will be directly under the Ministry of Health in the State.

The Network Director will be a State authority whose selection shall be based on Job Descriptions developed—sample appended. The selection will be open competition through Public Service Commission and only the qualified personnel with minimum basic requirements will be eligible and short listed.

The salaries and fringe benefits will have to be competitive as per the grade in the Government.

06. 2. 4 Benefits of Network:

The benefits of networks can be summed up as:

01. Easier user access to materials;
02. Expanded and improved library services;
03. Cost savings;
04. Education and CE for Library Staff; and
05. User Education.
Networks make a major contribution to libraries by facilitating research and development and capital acquisition of new technology by providing an effective structure for technology transfer [249]. These offer a structure for local or regional experimentation while simultaneously permitting large scale testing [94]. Failures in networking could be avoided in libraries and successful innovations can be disseminated through the facility. Many librarians will agree that the network activities have widened the sphere of librarianship and there would be both personal and professional benefits from network participating [321].

06. 2. 5 Problems and Issues of Network:

The following are the barriers that must be dealt with for the development of network [39]:

01. Economics;
02. Political;
03. Human and Professional; and
04. Cultural and Social

The economic barriers are the first and foremost problem arising from resource-sharing activities. These are inevitable. Some libraries will serve only as providers and others as recipients. The financial pressures on provider libraries will be greater as there will be inequalities.
To overcome these barriers, the academic and non-academic studies have attempted to develop the models or guidelines for library cooperation. These will include adequate funding of major libraries working as providers. The financial assistance from the Network authority, the government, and the management has to be in accordance with the services provided.

The Political barriers play critical role in development of a State-wide network. All resource sharing activities are inter-related. The politician’s inclusion the network management will to some extent resolve the barrier.

The human and professional barriers are those that arise in the libraries- between providers and providee. There is a sense of superiority and inferiority exists which is but human. It must be tackled in a way not to add to the problem. All professionals do work in their own libraries. The RHL librarians may feel superior in that they are the one who are providing services to other health sciences libraries. The other college librarians may also feel pressurized emotionally. A tactful communication channel between all professional will resolve the problems.

The problem in health sciences libraries in is the proper management of information flow and its use. The major barriers to the development of an integrated network system is the capital outlay required to invest in the new technology [55].
Presuming this would be resolved, the first and foremost problem arising from resource sharing activities is the inevitable inequalities between provider libraries and libraries that are predominantly recipients. The idea of sharing carries with it not only some notion of reciprocity, but also an idea that participants possesses materials they can share.

All resource sharing activities are inter related. The advantages of one activity must be evaluated in the light of its potential impact on others. for e.g.:

Jurisdictional and administrative problems are complicated by copyright consideration in making items available through ILL facilities.

This problems could be resolved by carefully following rule no.102 [8] "copying for personal use".

Savings in cost of acquisition of materials must be weighed against the cost of borrowing. To be successful, a cooperative acquisition program must be supported by an effective ILL service. The delivery time and efficiency in methods of payment for services have to be accomplished.

The need for sharing the cost of ILL functions associated with resource sharing is the central issue. The rationale for ILL without charges are currently no longer viable [219].
The second problem will be regarding bibliographic standards and quality of bibliographic records in cooperating cataloging. The increase in cost and decrease in productivity stemming from conformance to standards for network cataloging may result in inconsistency with cataloging rules or styles of the individual libraries in the facility [252]. Standard subject headings and descriptors are recommended for subject entries [341].

Costs are higher in some automated networks. These are increased in the use of training of network system.

Third problem will be a sense of loss of identity and conflicting loyalties often emerge as a concern of participants in network activities. Smith [353] succinctly identifies this problem:

"We have found ourselves in the middle of new conflicts; between our commitments to our primary constituencies and our network partners; between our institutional goals and values and sometimes very different goals and values of network directors; and with each other, particularly when we represent different types of libraries".

To overcome such reasons and problems in network environment, Smith recommends:
01. That the managers evaluate prospective cooperative arrangements in the light of the characteristics of those that have been successful: quality, adaptability, programmatic focus, commonality of interest in programs and organizational effectiveness;

02. Caution to librarians to assess the nature and depth of potential conflicts before entering into any cooperative venture. Alternative approaches to the proposed cooperative activity should be explored;

03. On going evaluation of network participation is essential. Librarians must consider the objective of a cooperative venture and must monitor its operation; i.e. They must bring to the network good management practices they rely on in their own individual libraries.

The ultimate goal is to develop role of libraries as full learning resource centers for education, research, and service [396].

To avoid conflicting loyalties of participants between network commitments and their clientele, institutional goals
and objectives, more effective participation in cooperative ventures is recommended where managers evaluate prospective cooperative arrangements in the light of those that are successful; assessing the nature and depth of potential conflicts in network participation; and ongoing evaluation of network [353].

A library serves as a bridge between the user and the external information base and uses management concept to organize, format, package and deliver information to the network users. In order to support the storage and transmission of information, network must support the three related services [390]:

** Any item of information in the facility must be found by subject, or authority on demand by an user;

** It must incorporate a name and authority system to simplify and control access to the stored information; and

** Access control and accounting services attached to these authority systems.

The network planning has to be within the context of total health care system and since such network facility will support health care delivery, education and research, critical needs of libraries, librarians and users have to be evaluated.
These needs should consist of identifying key elements and functional requirements; education for library staff; and setting priorities for network development [309]. The system should be built on the existing resources, utilizing new techniques and equipments to improve flow of information throughout the facility [83]. The resource sharing is supplement to and not a substitute for strong and working collection in libraries [95].

One of the most important phases of network planning is the exploration of knowledge and an inventory of the resources available. In developing nations, the libraries are suffering because of lack of resources; lack of resource sharing and planning [39]. The collection and resources will be helpful in accomplishing results beyond the capacity of an individual library [311].

The network program requires moderate funding. Barbra Markuson [248, 249] points our three important aspects of network program to:

a] Develop management skills;

b] Orient library personnel to network operation; and

c] Revise library schools curricula.

The network implies an organizational commitment to resource sharing beyond the concept of cooperation [64].
The network facility must designate some libraries as Regional Health Sciences Libraries [RHLs] in the state. Important guidelines for their selections have been suggested [60].

The development of network essentially must consists of four phases [309]:

a] Collection development;

b] Training of library staff;

c] Consortia formation; and

d] Network management.

Resource sharing in libraries of the developing nations will be doomed to failure, if participants do not realize importance of information for solving social problems and helping social and economic developments [39].

The networks are governed more than these are managed. The governance is aimed at coordinating and assuring that necessary standards for practice are developed and observed. Stevens [362] delineated six purposes of governance of the facility:

01. To adopt a statement of purpose, objectives, goals so as to unite autonomous network participants;

02. To establish basic procedures of network;

03. To provide stability in progress toward
mutual goal so that the network will be controlled by principles rather than by individuals;

04. To establish a legal basis for ownership that will uphold the right and principles of participants as well as limit their liability for future support;

05. To create an operating entity that will be recognized by all governments, associations, agencies, institutions, etc.; and

06. To establish standards by which the effectiveness of network can be measured.

He further delineates the three configurations of network governance by:

[a] **Government**: It is derived from statutory mandate by central, state or local legislative bodies and operates as agencies of their respective government;

[b] **Quasi-Government**: It derives its authority from central or state, local or a combination of both; and

[c] **Membership**: It derives both by non-profit membership- corporations, unincorporated
associations and consortia, incorporations establishes a legal identity for a network and includes among its benefits a favorable task structure.

Once a library becomes a member of network facility and accepts a commitment, it can not be abjured. A library does not join a network facility on its own terms but on the terms of the network management. The Regional Library Network will begin to explore building and managing of systems of health literature and libraries that will be accessed by users for required information [54].

The networks must have:

** Communication components and operate through communication technology, telephones, etc.;

** A set of protocols or procedures to which users must conform to effect communication;

** Clearly defined service goals with the agreement of management and are desirable by users.

The development of network must have as primary requirement [67, 82] the following:

01. The health sciences libraries with a
sizeable collection of reading materials as its base;
02. Regional libraries to be established;
03. The library services require both geographical and mission-oriented outlets;
04. There should be a central element—a libraries' library serving as a ultimate backstop to all local and state libraries.

06. 2. 6 Evaluation of Network:

The evaluation is basically an assessment of the achievements of a program compared to a standard and it is the surest way to test the planning. If a program is well planned, the benefits of sound planning will surface during evaluation. It provides feed back that may be applied to future planning. It is a primary tool used by organizations in forecasting future activities. The areas, where program activities produce beneficial results will be the areas where the future investment will be made.

The purpose of evaluation are to assess accomplishments and to identify limitations. Two terms often used in reference to evaluation are Formative and Summative.

Formative evaluation produces information that is fed back into program planning. It is evaluation used in "forming"
programs. It serves the needs of program developers and sponsors and not the users.

Summative evaluation, on the other hand, focuses on the effectiveness and efficiency of the program. It is evaluation used in assessing "how good" the program is. This serves those who use the services of the program as well as those who provide services—users and libraries and librarians.

Blum [33] cites six levels of evaluation. These levels are arranged in order of difficulty, and also in order of depth of assessment of program accomplishment [Fig. 29].

**Level 01:** The first level demonstrates the going on program. At this level, evaluation is focused on the personnel to check if they are on their track to meet the goals and whether the program is being implemented as per the schedule.

**Level 02:** This level seeks to determine if the program is functioning as designed according to standards.

**Level 03:** The third level assesses program efficiency which is a measure of cost required per unit of product. In health sciences libraries, efficiency is determined by the provision of satisfying the users information needs. The basic question to be answered at this level will be "Are personnel functioning at a level where benefits expected are reaching the users?" "How can efficiency be improved?"
LEVELS OF EVALUATION

OVERALL SYSTEM
APPROPRIATENESS

OUTCOME VALIDITY
LEVEL 6
LEVEL 6
LEVEL 4
LEVEL 3
LEVEL 2
LEVEL 1

EFFECTIVENESS
LEVEL 6

EFFICIENCY
LEVEL 4

ACTIVITY
LEVEL 3

MEETING STANDARDS
LEVEL 2

Source: BLUM, HL Planning for Health, 1974 [33]

Fig. 29
Level 04: Program effectiveness is assessed at this level, where the value of the program in affecting change in the user group is determined. The question to be answered at this level will be "How will the librarian know a desired outcome?" It is easy to note. The entire user community will provide feedback and so will the organization of which a library is a part.

Level 05: It measures outcome validity i.e. the extent to which the program is useful in dealing with the user community problems for which the program was designed. This level is truly a reflection of understanding of the problems in the user community and libraries. It seeks to answer whether the program produced what was expected.

Level 06: It addresses the appropriateness of the program in the overall system of health care. It will assess how well the program fits with others with same goals, and how well it fits with system of biomedical and health education and provision of health care information to all health care professionals in the community.

The levels of evaluation as presented range from simple to complex in ease of accomplishment, from specific to general in terms of emphasis on program activities and from non-rigorous to rigorous in assessing the value of program activities. The levels are not intended to be used exclusive
of one another; in fact, most health sciences library programs are evaluated informally on all levels. This section provides basis for evaluation and when, who what and why it should be done.

There are five essential steps required for program evaluation and Fig. 30 shows the relationship of the steps to one another.

**Step One:** The first step is to list the detailed description of the program as it currently exists as through the time, health education and libraries tend to evolve.

**Step Two:** This step determines the criteria used to evaluate. When objectives are established and program has been described and thoroughly understood, evaluation criteria is determined. This step of evaluation is easy if the program plan has been conceived is written with care. If the objectives are not written with implicit criteria for evaluation, the criteria must be developed.

**Step Three:** After the criteria has been determined, procedures for conducting evaluation are developed.

**Step Four:** The fourth step is to collect data to assess the extent to which the evaluation criteria has been met. The key here is successful and systematic collection of data. Deviations in the way data are collected, or the way in which
ESSENTIAL STEPS IN PROGRAM EVALUATION

STEP 1
Describe the Program and Specify Goals & Objectives

STEP 2
Determine Evaluation Criteria

STEP 3
Develop Evaluation Procedures

STEP 4
Collect Data

STEP 5
Examine and Analyse Data

Fig. 30
criteria for evaluation are applied, can destroy the evaluation efforts. Therefore consistency is very important.

Step Five: The final step is analyzing the data collected and producing a report. The analysis should point out where the program met criteria for success and should identify where improvements are needed.

The intended readers of the reports must be the consideration of the language used in report. Emphasis on any one aspect of the network program such as personnel, collection development, finances and services may be important to some readers, while another audience may be looking for other aspects. It is therefore important to discuss effects the network has on the users and the extent to which the goals and objectives of the facility are accomplished.

Many organizations have attempted to use standards as a method to assure quality services. These have often failed due to the lack of individual commitments and to the methodology used in their establishments of standards [336].

Evaluation is a part of the managerial process of the facility. It should be based on information and experience gained from monitoring the implementation of the policies, strategies and plans of action. It should also be based on the assessment of the efficiency of the program activities as well
as their effectiveness and impact in terms of improvements of the provision of biomedical and health care information.

Evaluation is a systematic way of learning from experience and using the lessons learnt to improve current activities and promote better planning by careful selection of alternatives for future action. This involves analytical assessment throughout the different phases of the managerial process. These analyses relate to the relevance of the program, the way it is being formulated, its efficiency and effectiveness, and its acceptance by all parties involved.

It can thus help guide the allocation of human and financial resources in current and future programs, but to do so it must be closely linked with decision making, whether at the operational or the policy level.

It has to be built into the entire managerial process for the facility and has to be applied on the continuing basis. It therefore has to be applied thought the planning and implementation of programs and the operation of services for delivering these so that their effectiveness can be assessed.

In evaluation, the following components should be taken into account with varying degrees of emphasis:

01. Relevance: It relates to the rationale for adopting policies in terms of their response to the health care;
02. **Adequacy**: It implies that sufficient attention has been paid to certain previously determined courses of action;

03. **Progress**: It is concerned with scheduled programs, delivery, identification of reasons for achievements or shortcomings, and indications for remedies for any shortcomings. Its purpose is to facilitate the monitoring and operational control of ongoing activities;

04. **Efficiency**: It is an expression of the relationship between the results obtained from the program of facility and the efforts expended on it by means of human, financial and other resources such as time, etc.;

05. **Effectiveness**: It is an expression of the desired effect of the program, service or support activity in improving an unsatisfactory situation. Thus it measures the degree of attainment of the predetermined objectives and targets of the programs and services;

06. **Impact**: It is an expression of the overall effect of the program and services on the related health care and biomedical field such as education, research and patient care.
The final objective of management is to evaluate the outcome of a plan and its implementation. Evaluation of service is important because user satisfaction is the key to the network's success. Therefore it is extremely important that an evaluation of the facility be undertaken on a regular periodic interval to know if the system established is meeting its objectives. Evaluation is a time for accounting, for comparing actions with accomplishments; and for detecting flaws and making improvements. It is a measure to see "how much" [quantity]; and "how well" [quality]. The sum of the two will represent the true value of the facility. It is important to measure both the output and outcome which can not be accomplished without the proper objectives. The evaluations are not conclusions; these are commencements. These will lead us to carry on more knowledgeable tasks in the future.

There is no universal answer as to WHO should conduct evaluation of the systems impact. The answer depends, in part on the personal resources available within the system- either from internal or by an outside consulting firm.

Internal evaluation should be good for the system as there are well experienced personnel in the field as, such a evaluation is a complex and technical- requiring in depth knowledge of research protocols.
Outside evaluation is not recommended as they are likely to take a detached look at the situation without introducing vested interests into the evaluation. The outside consultants are not likely to be aware or become aware of the subtle organizational relationship that will affect the overall operation of the system and will be more costly.

**WHO Should Do:**

If the choice is made of the internal evaluation, the question is then "Who Should Conduct?". It is really a function of importance that an organization attaches to the pros and cons of outside versus internal evaluation.

Evaluation should normally be undertaken within the resources committed and therefore internal evaluation is the **most probable alternative**.

A team approach must be used if an internal evaluation is to be undertaken headed by a qualified management scientist. The representatives should be from Finance, Administration, Medical and Allied Health Care Professionals and Health Sciences Librarians with a broad knowledge in the system.

**WHAT Should be Evaluated:**

There are several different impact areas on which an evaluation can be focused:

01. Information System - availability of exchange of documents; its effect on users and on
patient care, health education, etc.;

02. Information Service Improvement—Free and
timely provision of information based on
relevancy and shortest time lag;

03. Economic effects of the system on the
profession, the professionals and the
organization.

Failure to treat any one of the above subjects adequately
could result in sub-optimal operation or even failure of the
system.

**Two-dimensional Frame of Reference for evaluation Task**

[Fig. 31]

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Availability</td>
<td>Before</td>
</tr>
<tr>
<td>Information Service</td>
<td></td>
</tr>
<tr>
<td>Patient Care; Education</td>
<td></td>
</tr>
<tr>
<td>Employee Attitude</td>
<td></td>
</tr>
<tr>
<td>Active Involvement</td>
<td></td>
</tr>
<tr>
<td>Department Head Report</td>
<td></td>
</tr>
</tbody>
</table>

[Fig. 31]

**WHEN Should Evaluation be Undertaken:**

The timing of the data collection for comprehensive
evaluation is of crucial importance. It should always be when
members learn how to utilize the system [334] as illustrated by Fig. 32.

If one takes retrospective evaluation at Point "A", the system is being evaluated at a sub-optimal point. The personnel have not reached the peak of the learning curve, and they are therefore not able to use the system as efficiently as they will later be able to use it. This is an obvious bias in the evaluation of the effectiveness of the system. However, if the evaluation is conducted at Point "C", when personnel using the system have reached the peak of learning curve, the time between the implementation and evaluation may have been so extended as to bias the results of the evaluation. Since much time has passed, external variables may effect the outcome of the evaluation as much as the actual system itself. Therefore it is important to consider the timing of the post implementation evaluation and schedule it so as to obtain most realistic view of the systems effectiveness.

Therefore the best time for evaluation will be anytime after point "A" and between point "B".

WHY Evaluation Should be done:

It should be done to see:

01. The effects of the new system;

02. Whether the system has to continue or abandoned.
In carrying out an evaluation, quantitative measures may be used. Increase in output of a particular operation and reduction in time for the same output are equally effective measures of performance. It is ignored partly because it is difficult to do and partly because it is assumed that the planning process is complete once it is implemented. It is an ongoing process and necessary information on the objectives that have been realized. It is a measurement of effectiveness of the efforts to achieve goals. Failure to evaluate a program may lead to continuation of those programs that are not in line with objectives and goals of library network. There are two aspects of evaluation.

01. Program Evaluation which is both formative and submissive. Formative evaluation is continuous throughout the activity related to an objective and provides valuable feedback that can be used to modify the activity. It is process-oriented. Techniques of System Analysis and Operation Research are applied to determine what and how the data is collected. For e.g.

A delay in receiving new materials would result delay in cataloging and technical processing and thus might suggest that the receiving and order process must be modified- orders without payment, ordering to incorrect vendor or book agency. etc.
Submissive evaluation is product-oriented and is necessary to determine if the stated objectives have been met. It should be developed at the time the program is developed and then used to measure success or failure. e.g. In the above example of processing of new materials "Within 48 hours" can be measured and the success in achieving the objective can be determined.

Information for submissive evaluation which comes from the monitoring process in compared with the stated measure for program success in order to complete the evaluation. It is therefore effective-oriented. It determines whether or not a program has met its target that it was established to accomplish.

Both formative and submissive evaluation measure the success of a plan to achieve the stated objectives. These do not however, measure the outcome in terms of the users for which the activity was planned.

06. 2. 7 The Circuit Librarians:

Since the hospitals do not have libraries, it would be advantageous if the professionals are served with reading materials suitable to their individual needs on a regular basis. The health professionals of the hospitals have thus far been deprived of library services. This goal could be accomplished through "Circuit Librarians", who would visit
regularly each hospital and serve the professionals with materials relating to the advancement in medical or health sciences, diagnostic and therapeutic discoveries, newer techniques and their application to patient care. The role of Circuit Librarian or as it is now called Clinical Librarian is to identify pertinent resources and makes them available to busy physicians [245, 361, 410]. Gordon [149] has discussed the schedules and functions of Circuit Librarians including the time spent and financial involvement which will assist in gauging requirements for such professionals controlling certain geographic area allocated.

The state district hospitals offer patient care in specialities: Medicine, Surgery, Pediatrics, Obstetrics & Gynecology, Orthopedics, Ophthalmology, Dermatology, ENT, Pathology & Bacteriology, Radiology, Anesthesiology, and Dentistry.

It becomes unbelievable that the district hospitals in the state are managed with such specialities without any library or library services of any sort to clinicians and allied health care professionals. How then would the clinicians be able to acquire or at least know the recent therapeutic and diagnostic advances that could be extremely helpful in their treatment methods in district hospitals?.
06. 3 Regional Health Sciences Libraries [RHLs]:

Any medical school or a postgraduate institute's library willing to act as a RHL, must review carefully the complex implications involved. Eight important considerations are necessary [126]:

01. Conflict of interest;
02. Indirect costs;
03. Abuse of unlimited copying service;
04. Region-wide participation in planning;
05. Quality and rank of local libraries;
06. Risk of diminished support for library extension service;
07. Complexities of tertiary definitions; and
08. Defining the "Qualified" users for RHL.

Comprehensive and thorough advanced planning is a basic element in the development of regional libraries [396]. Cummings [83] describes three major components of RHLs:

01. Centralization of network;
02. Geographic dissemination of information; and
03. Mission oriented dissemination of information.

Each RHL is required to [60]:

01. Define quality and level of present and
future services;
02. State clearly the goals;
03. Provide, ILL, Medlars or Medline, backup
reference, orientations and training, CE
for library staff and support for CME.
04. Submit regularly periodic progress report.

The regional planning requires meeting with physicians,
librarians, educators, politicians, and the government
representatives to determine appropriate geographic boundaries
for each region [397].

The RHLS must share their resources with libraries in
specified geographic area and with local Health Sciences
Libraries [82, 84]. All the medical school libraries other
than the RHLs are to be labeled as Resource Libraries [RLs].
The RLs are to provide regional services; the RHLs must
administer and manage the service programs. The remaining
libraries in the region—nursing, dental, pharmacy libraries,
etc. will be called the Basic Health Sciences Libraries [BHLs]
and these will also include any hospital libraries,
association libraries and society’s libraries serving health
professionals.

The back volume section of a RHL must be strong and
include important titles from previous years. The ILL Study
from 1959-1984 at the US NLM showed that over 95% of the
requests were for articles from journals published since 1950 [221].

Without current and accurate information dealing with the information needs of health professionals and how they use this information, the RHLs will not be able to meet the information needs in the future. A survey by Lovas and colleagues [234], on the use of documents by health professionals from a Regional Medical Library network, shows that over 51% of materials requested were for clinical care and 53% requests were from physicians. The average time from the article or item requested on an ILL basis for its receipt ranged between 6-8 days.

06. 3. 1 Existing Science and Technology Information Network in India:

06. 3. 1. 1 Other Networks Working in India:

The development, design and operation of library and information networks in different fields of activities is gaining momentum in India. Thanks are due to the munificent help and aid of UNESCO and UNISIST to initiate the National Information System for Science and Technology -[NISSAT] in India. Under the NISSAT program, six National sectoral Information Centers, Two hard data centers and a national bibliometric center have become operative. Considerable
efforts are made to avail the opportunities to have an access to the International Databases utilizing the available communication, computer and Satellite facilities. The National Sectoral Information Centers which are in operation cover partially the biomedical and health sciences information. But looking at the growing need for health sciences information, there is a dire urgency for the exclusive information center at the National level for biomedical and allied health sciences. However, the Government of India is struggling hard to promote the information infrastructure in the field of Health, Food, Energy, Agriculture etc.

Another most welcoming feature is the establishment of National Informatics Center [NIC] in 1975 by the Planning Commission, Government of India. It is established to provide an infrastructure communication and computerization to aide the planning, monitoring of schemes and decision making processed in government.

A distributed model is implemented to provide uniform system for the users in the network facility, on national, regional, state and district level. Laudable attempts are being made and also in operation in training health sciences librarians to make use of the MEDLARS facilities through NICNET. The day is not far that health sciences libraries in the nation, however remotely located, are going to have a link
with NICNET to explore the possibilities of easy access to vastly developed International Databases in different disciplines of biomedicine and health sciences. What is urgently needed is to refresh the Indian tradition bound library professionals to these developing trends and challenges in information technologies.

Taking the cue from the successful operation of NISSAT and NICNET and recognizing the growing demand for information of all types of activities in different fields, the Government and other organizations are venturing to establish varieties of Network programs in vital subject areas. Thus the emergence of INDONET, VIDYANET, CALIBNET, DELNET, DECINET, INFLIBNET, VIKRAM, etc.

The rapid developments in the past decade have necessarily prompted one to believe that there is a possibility of catering to the health information for all by the end of this century. Therefore the development design of the state level information infrastructure in the essential fields of activities will go a long way in giving new dimensions to the National Development Program of any country, and especially, it is the need of the hour in India.
06. 3. 2 Selection of Regional Health Sciences Libraries [RHLs]:

The Regional Health Sciences Libraries are the soul of a network facility. The stronger they are in resources—financial and other, the network will be strong. Because of their importance to the network facility, selection of RHLs becomes extremely critical. The network authority must invite those health sciences libraries that wish to become a RHL. A health sciences library must explain why it wants to become a RHL. What collection and resources are available. It must be asked to inform its plans for the next 3-5 years about services it is going to provide to users. What plans are there to educate the users; what new technological advances are becoming its part.

The authority must also invite to comment on its relations with other libraries in the state and its plan to serve these libraries. The library must put forth in writing its long range plans that are helpful to the network facility. The library must also informs its intention to stick to the undertakings once it commits itself to be a RHL.

When all offers are received, each one must be evaluated in the light of the goals and objectives of the network facility in Karnataka. When the Board Members are satisfied
that any particular library has potentials to be an effective RHL, it selection shall be finalized.

The RHL must submit periodic reports of its activity as a RHL- and not as a institutional library- to the Network Authority which shall be monitored. A periodic evaluation must take place to become aware of the problems that a RHL is facing and must be set right. If it is noticed that the RHL has an errant course of action, it must be corrected.

The RHL must have its Chief Librarian with familiarity of the operation and management of the facility. He/she must disperse funds obtained from the network authority to the improvements of hospital libraries in the region. The RHL will have to be incharge of all Circuit Librarians appointed by the Network Authority who will work under the umbrella of the RHL in that geographic boundaries.

At the end of their tenure as RHLs, new offers must be sought to appoint RHLs for further period which will result in the improvements of individual libraries on competitive basis. Each library will be eager to act as a RHL and therefore will take required action to develop collection, increase subscriptions, improve service patterns, etc. and thus obtain contract as a Regional Library from the Network Authority.