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A PROPOSED COOPERATIVE SYSTEM FOR MEDICAL LIBRARIES IN SUDAN

BY

OMER HASSAN ABDELRAHMAN

A thesis submitted in partial fulfilment of the requirement for
the degree of Master of Science in Information Science in the
Addis Ababa University

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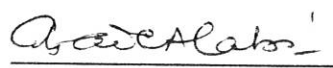
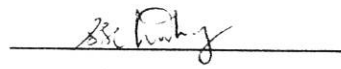
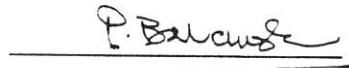
ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE OF STUDIES
SCHOOL OF INFORMATION STUDIES FOR AFRICA

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By

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ABSTRACT

This study has investigated and reviewed the medical information services and facilities in Sudan, including a survey of medical information users. This is done in order to propose a cooperative programme for medical libraries in Sudan so that the existing services and facilities could be strengthened.

The user survey has revealed that there is a lack of access to sufficient and to up to date information sources, especially textbooks and scientific journals. It also showed that there is a need for user education programmes.

The survey on medical libraries revealed that there is a shortage of qualified library personnel, as well as a lack of information technology equipment. The investigation of existing cooperation between medical libraries revealed that it is restricted to the exchange of books, gifts, and photocopy services. All surveyed libraries expressed their interest and willingness to participate in an organized library network.

Based on the findings of the study, a cooperative programme has been proposed. This programme includes cooperative acquisition, cataloguing\processing, storage, interlibrary lending and reference services, and cooperative education\research programmes.

In order to formalize and maintain the cooperative programme, a network for medical libraries is suggested. It is also suggested that the plan for this network be a phased plan; Phase 1 includes selection of network activities,

identification of participating libraries , and preparation of resource sharing tools.

CHAPTER 1

INTRODUCTION

1.1 Statement of the Problem and Justification for the Study

The present information era is characterized by rapid change in the way in which information is created, stored, retrieved , and transmitted. Access to medical and health sciences literature plays an important role in ensuring that health professionals at all levels are able to maintain high standards of health care delivery. Knowledge of new therapies or new epidemics is primarily transmitted through the periodical literature.

The present day health professionals and researchers are in need of more health information than ever before. Medical education and training has increased in complexity and are followed by new specialization. The need for medical students, teachers, researchers, and practitioners to keep abreast of current developments in the field of medical and health sciences necessitates using libraries and being conversant with the health information and literature.

In the past few years, the resources in medical libraries that are available to the health care community have increased significantly. This is accompanied by the increase in the forms in which information is generated; besides the traditional carriers of information such as books and journals, audiovisual and computer generated products have been developed and improved. There is now access to data bases related to health sciences via telecommunications networks.

According to Holmstorm, cited by Amarakoon, (1988) who was commenting on the 'Information Explosion' in scientific literature " The Problem is a formidable one. We have heard estimates of how anything up to a million or more scientific papers a year are published in the scientific world; and how formidable are difficulties of ensuring current awareness, by scientific men, of the new publications which may concern them in the particular fields of research which these publications serve to irrigate" According to him these torrents and rivers of current literature pour themselves into libraries adding, without cease, to what is already there.

The results of health research are published in order that the information may be communicated to the health professional as speedily as possible. It is of paramount importance to the health professionals and researchers to be aware of the latest development in their subject field of interest. Nowadays, periodicals constitute one of the main media of communication of the findings of research activities. So, with the increase in the number of periodicals, it has become more and more difficult to keep pace with what has been published. The acute problem of the increasing amount of health literature was felt by both clinicians and researchers who used libraries and health information centres.

Today there is quite a large number of periodical titles in the sciences, especially in the medical and related sciences. These titles include both primary and secondary sources of

information, Amarakoon (1990).

It goes without saying that information is directly linked to development, and that priority of information becomes more important and vital when it is related to the health and biomedical spheres. The World health Organization has declared that information build a better world. It has further stated that reliable information is the corner stone for building the awareness, expertise and practical strategies to improve the world situation, especially its physical and mental health aspects.

Along these lines, it is possible to say that the basic role of information is to create awareness among the recipients. The target recipients of health information can be broadly grouped into five main categories; researchers, teachers and students, health care workers, health administrators and planners, and the public.

Therefore, use of medical literature is a must for research and planning for development. a medical library rich with collection and well equipped with requisite staff and service is indispensable for any research worker.

Access to medical and health literature is more vital for the Third World. According to a study carried out by Garfield at the Institute of Scientific Information in Philadelphia, Third World research activity is found to be focused on clinical and biomedical sciences, more than on other sciences.

AS for the higher education and research activity in Sudan, The higher education environment has changed significantly in the last few years. Due to the new higher education policy which was implemented in 1991, the number of universities and higher education institutes has increased in a significant way. As a result, there are now more than fifteen universities and higher education institutes throughout the country. The majority of these new universities have medical schools affiliated to them.

Bearing in mind the pivotal role that medical libraries play in the access to medical and health information which in turn is essential in the educational process in the medical schools, the new medical schools face a real problem; The fact that the overall budget of the higher education institutions is limited make it very difficult for the universities to allocate sufficient financial resources to the libraries.

The situation is aggravated by the fact that the number of student intake is increasing annually in the newly established universities. Moreover, the number of postgraduate medical students and researchers is growing steadily. Therefore, the need for students, teachers, and researchers in the medical and health sciences to access sufficient, relevant and up-to-date information is ever growing. All these call for a proper health information system to enhance their various programmes.

1.1.1 Problem of Accessibility to Medical Information

University medical libraries in Sudan, as in many other Third World countries, have been negatively affected by the tremendous growth of literature and the excessive increase in the number of periodicals and the high cost of books and periodicals. Fluctuation of foreign currency conversion rates has worsened the situation. These are some of the more general causes of the problem of access to medical literature in Sudan. In addition to these general problems there is the specific problem faced by most of the medical libraries in Sudan; Being newly established, these libraries lack most of the essential information sources and services. This problem too may be attributed to the severe financial constraints that are faced by all the university libraries in the Sudan. Therefore, there is a need to explore possible solutions to the problem of access to health and medical information , which this study is attempting to look into.

One possible solution is the cooperative approach. The concept of sharing resources among libraries through cooperation has become an important issue in library and information studies literature. According to Kent (1977), the goal of sharing resources among libraries and information units is two fold: to provide more material and sources and to do so at a less cost. He further stated that " Library networks exist for the purpose of sharing resources, bibliographic data, functions, materials, human and technology resources."

A number of scholars have agreed that the basic objective of all library resource sharing programmes must be to improve the ability of the participating libraries to perform their basic function of matching user needs and information sources. The participants in the 1960 UNESCO Regional Seminar on Bibliography, Documentation, and Exchange of Publications in Latin America held in Mexico city recommended that " in view of current developments in science and technology which make adequate and efficient bibliographical and documentation services a necessity..... there should be a coordination of and broader cooperation among the university libraries, documentation centres, and specialised libraries in each country..... and programmes should be drawn up with a view to (a) ensuring better utilization of bibliographic and documentation sources; (b) establishing joint plans for the selection and acquisition of bibliographical materials; (c) intensifying interlibrary loans at the national and international levels and encouraging the creation and development of services for the photoproduction of documents....."

According to Kittle (1975) a national (library) network should allow for diversity among political entities as well as among subject specialization such as law, medicine, art, and agriculture.

1.2 Objectives of the Study

1.2.1 General Objective

The general objective of this study is to look for a solution to the problem of access to medical literature in Sudan . This is pursued by proposing a cooperative (networking) programme to be implemented by the different university medical libraries in Sudan.

1.2.2 Specific Objectives

For the purpose of realising the general objective of this study, the following specific objectives will be pursued:

- To identify the existing medical information infrastructure with a view to survey the available techniques of processing, handling, and disseminating information to end users;
- To identify the different categories of medical information users with a view to identify their specific information needs and information seeking behaviour; and to identify how satisfied they are with the services they get within their respective libraries.
- To identify the existing pattern of cooperation among the different medical libraries.
- To obtain the opinion of the medical information professionals and users to the idea of resources sharing and networking among medical libraries in the country.
- To study the existing cooperative models with a view to select and propose the most appropriate one for university medical libraries in the Sudan.

1.3 Significance of the Study

This study is seeking a solution to the access to adequate, up to date, and relevant medical information within university medical libraries in the Sudan. The fact that medical services play a vital role in the welfare of the people in general and hence contribute to the socioeconomic development of the country is a viable justification to carry out such a study. In order for the different medical schools to be able to graduate well qualified medical professionals, it is essential for the teaching staff and the students to have access to the information they need adequately and timely.

The study also aims at investigating possible ways and means of strengthening coordination and resource sharing among the existing university medical libraries in the country. This is pursued by identifying the existing factors that contribute positively and/or negatively to this aspect. By highlighting those factors, the study can play an important role in drawing the attention of the concerned authorities to the necessity of seriously dealing with these problems.

The study will also highlight the users' evaluation of the current medical library services available to them. By doing so, these services could be improved upon and geared towards the real user needs and requirements.

1.4 Scope and Limitations of the Study

1.4.1 Scope

The scope of this study is confined to the surveying of existing medical information services within universities in the Sudan. In light of the findings of the study, a programme of cooperation and resource sharing will be proposed to be implemented by the different university medical libraries in Sudan. However, this study will not be involved in deciding on the requirements of the technical aspects of networking which, as envisaged by the investigator, is an advanced stage in the realisation of the proposed cooperative programme.

1.4.2 Limitations

The study, due to mainly time and financial limitations, has not covered all the university medical libraries throughout the country. As a matter of fact, the investigator planned to survey the seven university medical and health libraries within the capital city of Khartoum. However, this was not possible due to time constraint;

Another major limitation confronted by the investigator is the poor response to the questionnaires in two of the medical schools covered, namely, the Omdurman Islamic University Medical School and the College of Health and Environmental Sciences. The poor response from these two universities was apparently due to political reasons; there were students demonstrations and staff went on strike in these universities at the time of data collection. As a result, The libraries of

these two schools were excluded from the survey sample. This was necessitated by the fact that none of the questionnaires distributed to these schools was returned within the data collection period. Therefore, the number of the surveyed libraries dropped to four medical libraries within the capital city of Khartoum.

1.5 Methodology

1.5.1 Data Collection

For the purpose of this study, the descriptive survey method was used by the investigator. Descriptive research is a kind of research which includes surveys and fact finding enquiries of different kinds. The major purpose of descriptive research is description of the status of affairs as it exists at present; Descriptive research portrays accurately the characteristics of a particular individual or a group, Bhattacharyya (19950)

According to Goldhor (1972), the descriptive survey research consists of those techniques which serve to gather contemporary data either by direct measurement or by solicitation from others. He further stated that survey research is clearly different from historical research which is concerned primarily with data from the past, and that " surveys are distinguished from experiments mainly by the fact that the investigator is trying to measure what would have happen even if his study had not taken place, rather than to measure the effect of response to stimuli he deliberately introduces (as in the case of experimental research) " Goldhor (1972).

Busha and Harter described three broad categories of

information that are normally gathered and reported in library surveys, namely:

- (a) Existing library conditions;
- (b) Comparison between present conditions and desired standards;
- (c) Comparisons for the improvement of existing conditions.

They also state that the survey type of research is characterized by the selection of random samples from large and small populations to obtain empirical knowledge of contemporary nature.

1.5.1.1 Questionnaires

In this study, Structured questionnaires were employed for data collection. There are two types of questionnaires used; One to gather data about the medical libraries and the other one is used to gather information about users' needs and their evaluation of the available services .

The questionnaire for medical libraries consisted of three parts. Part one is meant to gather information about the library, including information about the staff, budget, organizational units, collection ...etc. Part two deals with cooperative activities and part three is a network opinion survey.

Both questionnaires were pretested before they were used.

1.5.1.2 Interviews and Observation

The questionnaires were verified and supplemented with interviews and direct observations. The interviews were conducted in an unstructured and informal way. Notes were taken by the investigator while carrying out the interviews.

Direct Observation method was also used to collect data about the surveyed libraries. According to Goldhor (1972), direct observation eliminates the distorting influence of others who come between the investigator and the event in question, but is limited necessarily to what takes place in the presence of the observer. He further states that because of its high degree of reliability, direct observation is a good method by which to verify data secured by other methods. In this context, personal site visits were paid to the surveyed medical libraries. These visits were made in order to observe the actual and potential service capacity and physical facilities so as to supplement the data gathered through questionnaires and interviews.

1.5.2 Data Analysis and Tabulation

Two types of population groups were considered in this study; medical information users and the facilities and services within medical libraries.

The medical information user group consisted mainly of university medical teaching staff, postgraduate and undergraduate medical students. The undergraduate students population was restricted to the two final classes i.e the fifth and sixth year students. This is due to the fact that

they use the library more intensively than other junior students hence they are in a better position to understand the questions and respond properly. On the other hand, the teaching staff and the postgraduate students form the group that is involved in research and depend on the library services to carry out their research and that they are able to evaluate the services available in their respective libraries.

The second group of population consisted of university medical libraries. Following is a list of universities in Sudan where there are medical and health sciences libraries.

University of Khartoum
University of Gezira
University of Juba
Al-Sharg University
Omdurman Islamic University
Ahfad University for Women
College of Medical Laboratory Sciences
College of Nursing
University of Kurdufan
University of Darfur
Al-Azhari University
College of public and Environmental Health

Sampling was necessitated by time and limited financial constraints. Six university medical libraries in the capital

city of Khartoum constituted the sample ,these are namely:

- University of Khartoum Medical Library;
- Ahfad University for Women Medical Library;
- Al-Azhari University Medical Library;
- College of Medical Laboratory Sciences Library;
- Omdurman Islamic University Medical Library;
- Library of the College of Public and Environmental Health.

The reason for the selection of these libraries to constitute the sample is that they are the biggest and most well-established of all the university medical libraries in the country.

In the process of data collection two medical and health sciences libraries were excluded by the investigator from the sample because of poor response to questionnaires, as explained earlier in this chapter. These are the Omdurman Islamic University Medical Library and the Library of the College of Public and Environmental Health.

As for the second group of population, the medical information users, 48 questionnaires were distributed out of which 31 questionnaires were returned, giving a response rate of 64.6%. These questionnaires were distributed with the assistance of the medical librarians in order to make sure that all targeted users were included.

The raw data obtained from the questionnaires and interviews were analyzed and tabulated. Responses to open ended questions were summarised. The proposed cooperative programme is derived mainly from the analysis of the literature reviewed, and the findings of questionnaires, interviews, and personal observation.

1.6 Organization of the Study

The second chapter of this study deals briefly with the library and information infrastructure in the Sudan. In this chapter the problems affecting library and information infrastructure in the country are highlighted. Problems of university libraries are also briefly discussed with special emphasis on the university of Khartoum Library which is the largest and oldest of all university libraries in the country.

Chapter three reviews literature on library cooperative programmes including library resource sharing and networking.

Findings and discussions of the current status of medical information services in the country are dealt with in chapter four.

Chapter five discusses the application of modern information technology to library cooperation and resources sharing, and shows to what extent modern information technology can be exploited, in the future, to the effective and efficient

implementation of the proposed cooperative model.

Chapter six is devoted to the proposed cooperative programme which is derived mainly from related studies and findings of this study.

The final chapter summarizes the major points and conclusions of the study and suggests some recommendations for the implementation of the proposed cooperative programme.

1.7 Definition of Terms

Library Network : Two or more libraries or library related organizations exchanging library data materials or services for the realisation of their respective goals and objectives.

Library Cooperation : Any activity between two or more libraries to facilitate, promote, and enhance library cooperation, use of resources, or services to users.

Resource Sharing : This entails reciprocity, implying a partnership in which each member has something useful to contribute to others and which is willing and able to make available when needed.

Library Resources : Any and all of the materials, functions ,
and services which constitute a modern
library system.

CHAPTER 2

LIBRARY AND INFORMATION INFRASTRUCTURE IN SUDAN : AN OVERVIEW

Sudan is the largest country in Africa. It extends across an area of approximately one million square miles. It is bordered by nine countries; Egypt and Libya on the North, Eritrea and Ethiopia on the East, Kenya, Uganda, The Central African Republic on the South, and Zaire and Chad on the West.

Khartoum is the capital city. It lies at the confluence of the White Nile and the Blue Nile, approximately in the centre of the country.

The population according to the 1993 census is about 26 million. Arabic is the official language. It acts as a lingua franca throughout the country. It is also the medium of instruction in schools and since 1992 in universities and higher institutes. There are also a number of vernacular languages especially in the South.

Administratively, the country is divided into 26 states which in turn are subdivided into a number of provinces.

2.1 Background Information

Despite its current political and economic hardships and problems Sudan has a long tradition of scholarship and learning in which one would have expected a library tradition of some sort to establish itself, Haughney (1990).

Background information on libraries in Sudan is derived mainly from two consultancy reports made in the early 1960's by Philip

Swell and J.S Parker. They both studied the libraries situation in Sudan ,identified their problems and made some recommendations for the solutions of those problems.

The report prepared by Swell who visited Sudan in 1960 was one of the earliest reports about Libraries in the Sudan. He proposed the following in his 1960 report;

- 1.The design of the university of Khartoum library as the national library in the Sudan.
- 2.The establishment of a Central Libraries Board responsible to the Ministry of Education for promoting the development, coordination, and improvement of libraries;
- 3.The development of a Central Library at Omdurman as a model public library providing some central services to other municipal libraries;
- 4.The development of rural and school library services; and
- 5.The training of Sudanese librarians;

In 1971 J.S. Parker visited Sudan to survey the existing library situation as the basis for the preparation of a national plan for libraries in Sudan. He found that none of Swell's recommendations was seriously considered.He found that 'the overall picture of the state of library services in the Sudan was one of a stagnation and even deterioration since Swell's visit in 1960's, Parker (1973). He further made the following observations :

- There was no Central Library Board and therefore no coordination of library services in Sudan;

- The number of public libraries has declined from 12 to 6 since Swell's visit, and Omdurman Central Library (which Swell suggested should be developed as a model public library) was housed in its fifth temporary home in 10 years.
- Public libraries were not in a position to play a significant role in the lives of communities;
- There were no libraries in primary schools and those in secondary schools usually consisted of a cupboard in the Principal's office with sets of class reading books; in those schools with separate library rooms the books are out of date and in poor physical conditions;
- In institutions of higher education, library provision was not even and several had not received a book budget in years;
- Although some special libraries administered by government departments had good basic collections of appropriate documents, there was inadequate provision of money and staff to keep them up-to-date to date and fully exploit them for the benefit of users; and
- The University of Khartoum housed the only important library of any kind.

In order to address these problems, Parker produced a detailed 10 year development plan for the establishment of a national system for library and documentation services. He recommended the establishment of a National Council for Library Development under the chairmanship of the Minister for Information and Culture. This National council was to be responsible for coordination. In his plan, Parker put forward detailed

forecasts of book acquisitions, staff requirements, and building needs. Most of his proposal were approved by the concerned authorities before the final plan was submitted. During his mission draft legislation was prepared and discussed at ministerial level. Parker was optimistic about the outcome of his mission. He wrote " The widespread awareness of the importance of better library services which the writer found in the Sudan during his visit was most encouraging". However, the enthusiasm for change faded away soon after Parker's departure from Sudan. The only positive action taken was the establishment of an ad hoc committee by the Ministry of Education, and the creation of an standing Library and Documentation Committee. As Parker stated in 1985 "...it seems clear that more is required for successful library development than the mere production of a development plan, however detailed."

As for library cooperation in Sudan, it is clear that there is no such activity among Sudanese libraries; According to a study carried out by Istasi (1986) existing libraries in Sudan are not linked by means of any kind of administrative structure. As a result there are a number of examples of wasteful duplication of efforts and overlapping responsibilities. She further noted that libraries tend to identify themselves as isolated units. This isolation resulted in fragmentation of resources, inadequacy of services and costly duplication of materials.

2.2 Problems Affecting Information Infrastructure

The library and information infrastructure in Sudan is plagued by a number of problems that contribute negatively to the development of this sector. According to Radia Mohammed (1985), The biggest obstacle to information and library infrastructure in Sudan is the inadequacy of financial and material resources available for information activities.

Basit (1988) highlights the fact that, at the present time, Sudan has no overall policy or legislation that governs, regulates, and guides the information activity, although there is a policy on scientific and technological information. He further states that there is no mechanism for the coordination of information activities at the national level with necessary powers of decision making, implementation and monitoring of specific programmes and projects.

Other problems include scarcity of space, shortage of equipment and qualified staff, inadequacy of legal deposit legislation, or its application which hampered the organization of national bibliographic control. There is also the lack of a government central point to which requests for publications could be addressed. There are often no set of standards for printing and circulation of the government publications and lack of application of library and documentation techniques to government documents to ensure their effective utilization (Yousif, 1989).

Some libraries and information centres have been established without conducting any background and feasibility studies. This

resulted in the fact that the collections and services of these libraries and information centres are not able to cope with the changing of their users' needs and requirements.

The limited secondary services available are not able to support document delivery service; It is difficult to produce copies of the documents referred to in retrospective bibliographies and current awareness services.

Another major reason for the inadequacies of the national information infrastructure is the lack of qualified and well trained information professionals. This is caused mainly by the lack of training programmes and facilities.

2.3 University Libraries

Until 1991 there were only four universities in the Sudan, in addition to a number of higher institutes. The old universities are;

- University of Khartoum;
- Omdurman Islamic University;
- University of Juba; and
- University of Gezira.

In December 1991, a new higher education policy was implemented . This policy aimed at the expansion in higher education. As a result, there are now more than fifteen universities throughout the country.

The majority of the new universities lack well established library and information services. They are faced with a number

of problems that are common to most of the university libraries. These include the following :

- Lack of clear and working library policy;
- Shortage of professional librarians;
- Inadequate library collection;
- Lack of financial support;
- Reading space problem;
- Lack of proper library cooperation ;
- The rising prices of books and journals;
- The costs and problems of providing IT-based services; and
- the rising demand from increased student numbers.

2.3.1 University of Khartoum Library

University of Khartoum was established in 1902 as the Gordon Memorial college. It was renamed University of Khartoum after independence in 1956. Since then the university has had a continuous plan for expansion and development in different academic areas. This academic activity is supported by a number of libraries amongst which is the university library and the departmental libraries under its control. The large and complex university library hosts a big collection of national significance in the special Sudan Library collection. It has the potential to more fully support the teaching, learning and research objectives of the university, McDonald (1994).

The British Council supported the commissioning of a report in 1991 by Julie Carpenter, a British Library Consultant. The

objective of this report was to investigate the ways and means of meeting the information needs of the University of Khartoum Library users in the light of national policies on Arabisation, increased student enrolment and budgetary constraints. The Carpenter report comprehensively described the university library system and analyzed its problems. She identified the key issues and strategies for change and made recommendations for the " Rehabilitation of the University of Khartoum Library and Information Services". She put forward some conditions that should be fulfilled by the university before donor agencies could consider funding the support packages she recommended. In annex 12 of her report, Julie Carpenter summarized 12 prerequisites for donor assistance. Although the emphasis on donor assistance has changed since then, it is useful to highlight these prerequisites. They are:

1. Introduction of defined library policies and management plan.
2. Implementation of recommended stock discarding and relegation in main subject areas, including faculties of Engineering and Education.
3. Space reorganization in Main library, Engineering and education faculties and creation of and provision of shelving for library store.
4. Acquisitions of Arabic materials , specifically for undergraduates in key subject areas as available.
5. Adoption of Dewey Decimal classification 20 in all libraries

for all materials. Establishment of a union catalogue of library book holdings.

6. Establishment of effective clearing schedules for main library collections and rooms; repair of existing tables and chairs

7. Provision of a library-vehicle with a regular schedule for visiting faculty libraries off the campus.

8. Provision of contracted-in, effective photocopy service for staff and students, based in main library premises, run on a commercial bases but not by library staff.

9. Adoption and implementation of new loan policies including loans to undergraduates, abolition of postgraduate loan deposit, effective operation of improved circulation, recall and loan penalty systems with staff as well as students.

10. Revision and reorganization of reserve collection in all libraries to make them more accessible to students, effective system for regular reviewing...etc.

11. Return to the medical faculty library of the space now occupied by the Medical Educational Development Centre.

12. Completion of survey of periodicals and serials use.

According to a report prepared by A.C McDonald, a British Council consultant who visited the library in December 1993, considerable progress has been made in the "Rehabilitation" of the University of Khartoum Library since the Carpenter Report in 1991. He further recommends that provision of services should be firmly based upon meeting the needs of university

teaching , learning and research. The current unplanned degree of decentralization of library services in the university, of which the University Library is only a part, is neither cost effective nor in the best interests of providing quality services to users, McDonald(1994).

The University of Khartoum Library is considered to act as the National Library as it hosts the Sudan Collection. This section is now rehabilitated and moved to a new separate building within the university campus.

The Medical Branch library is also considered as the focal point for the Healthnet Information Service, with a ground station linked by satellite to Cambridge, Massachusetts in the United States of America. In addition to receiving medical information from other parts of the world, the ground station is committed to acting as a national focus for communication and to uploading locally-generated health information.

CHAPTER 3
LITERATURE REVIEW

3.0 Introduction

This chapter reviews literature on library cooperation, resource sharing, and networking. The chapter begins with a general overview of the concepts of library "cooperation", "resource sharing", and "networking" as expressed by a number of scholars in the field. The chapter then proceeds to discuss different aspects of library cooperation and resource sharing including the need for cooperation, cooperative activities, benefits of library cooperation, and the difficulties faced by library cooperation and resource sharing programmes. The chapter also reviews library and information networks including such aspects as motivation for library networks, types of library network services, network organization types, and different network structures and configurations. The chapter also reviews some of the studies carried out in some African countries dealing with library cooperative and networking systems.

Throughout this study, the terms "cooperation" and "resource sharing" will be used interchangeably whereas the term "networking"

will be used to refer the physical and formal arrangements among participating libraries in order to implement cooperative and resource sharing programmes.

3.1 Cooperation, Resource Sharing, and Networking

Cooperation in information services, according to Ncgobo (1986), may be described as a programme of action covering the mutual agreement of two or more information service organizations pooling part or all their information resources without impairing or disrupting internal procedures in order to accommodate the particular needs of the participants. He further states this action of cooperation in information services is referred to by different terms in varying environments; these names include "**Resource Sharing**" and "**Networking**".

In Swell's viewpoint (1981), resource sharing may appear to be nothing more than a new term for "library cooperation". He further states that there is a significant difference in the approach between resource sharing and library cooperation. According to him, the term "library cooperation" takes the existence of libraries for granted and describe how they can achieve their objectives better by working together. On the other hand, the new term "Resource Sharing" appears rather to assume a range of physical, intellectual, and conceptual resources on the one hand, and a body of people with library and information needs on the other. In other words, resource sharing may be seen as a term for working out inter-institutional relationships for the benefit of users in a profession which is frequently described as changing from a materials-oriented to a client-oriented profession, Swell (1981).

In his own assertion, Wilson (1983), stated that the term "Network" may be taken to mean an institutionalized system of cooperation, probably utilizing computers and telecommunications technology for consulting, ordering and delivering documents and information and even for reference dialogue.

On the other hand, Rogersom (1987), argues that in librarianship, networks are to a large extent associated with cooperation and perceived as systems for two way traffic across channels of communication. This, however, was challenged in 1992 by Dempsey who had a slightly different interpretation for the term "Network" in the context of librarianship and information work. Dempsey claimed that the term "network" has long been current in the library community, but it has been used rather promiscuously to describe a variety of possible cooperative activities, whether or not they are based on physical telecommunications links.

In 1988 Molhot, cited by Dempsey (1992), noted that there was a constant confusion in the library and information community regarding the dual nature of networking, particularly as two meanings or functions intertwine so strongly in today's libraries. According to him, most of the references to networking in library literature refers to the resource sharing aspect of the term, despite the fact that the enabling mechanism for such sharing is telecommunications.

In the case of the National Commission on Libraries and Information Services , in the USA, following definition of a library network was offered," Two or more libraries and/ or other organizations engaged in a common pattern of information exchange, through communications, for some functional purpose. A network usually consists of a formal arrangement whereby materials, information, and services provided by a variety of libraries and/or other organizations are made available to all potential users". This definition further states that libraries may be in different jurisdiction but agree to serve one another on the same basis as each serves its own constituents, and that computers and communications may be among the tools used for facilitating communication among these libraries.

However, Buttler in 1975, cited by Rouse and Rouse (1980), suggested that a library network must include the use of some form of telecommunications.

3.2 The Need for Cooperation

Cooperation and resource sharing are now necessitated by information explosion, the advance of modern technology, the rapidly rising costs of needed resources and the wide disparity between the resources available to individuals by reason of geographic location or socioeconomic position. This was stated by the Resolution on Networking of the White House Conference on Library and Information Science, in the USA, 1979.

In addition to economic factors that have motivated the emergence of library resource sharing programmes and networks,

There are also some factors that are related to new technology; application of computer technology to library services have encouraged, for example, shared cataloguing services and large scale distribution of microfilmed book catalogues. Moreover, professional reasons were cited in 1980 by Rouse and Rouse for the emergence and growth of library networks . In this context, they argued that librarians, like other professionals are judged by peer review. This review process , as noted by Thompson (1967), requires some outward manifestation of professional achievement that may or may not reflect substantial contribution to one's field, but are never the less the criteria commonly agreed on. Along these lines, Rouse and Rouse (1980), argued that among the many possible yardsticks used to measure the professional "worth" of librarians, one might include experience with the latest developments in computer applications and network management.

3.3 Cooperative Activities

There are a number of activities that could be carried out in a cooperative programme, as discussed in the literature. The basic areas discussed are " Acquisition, cataloguing\processing, storage, interlibrary lending, and staff development".

3.3.1. Cooperative Acquisition : This, according to Ncgobo (1986), involves the joint purchasing of library materials whereby participating institutions are assigned special

responsibilities to purchase items of specific types either by form, subject-content, geographic region, or any other criteria that have been agreed on by the participating libraries and information service units. Harrison in 1979 pointed out that the basic requirements in this type of cooperative activity is substantial funding on regular basis for participating libraries, so that they could make direct contributions in the joint purchasing of library materials or to fulfil their responsibilities of building collections in special subject areas.

3.3.2 Cooperative Cataloguing : This is a house keeping process that involves the sharing of skills of individual cataloguers. Cataloguing of library materials is carried out by a central cataloguing agency, which later distributes copies of catalogue card to the participating information service units, Rowley (1992). On the other hand, Soltani (1979) indicates that the major objective of cooperative cataloguing is to standardize technical processes among participating units, so that they can cooperate more efficiently.

3.3.3 Cooperative Storage : This, according to Sewell (1986) is motivated by the shortage of storage space in individual libraries. Sewell further stated that the objective of cooperative storage is to relieve pressure in shelving space. Library material is relegated to a storing-house which provides cheap storage for the participating institutions.

3.3.4 Interlibrary Lending: This involves the transaction in which library material is made temporarily available for use by one library to an other. Harrison (1979), and Line (1979) indicated that the major purpose of interlibrary lending is that participating libraries give access to each other's resources to supplement their own, and to reduce duplication of acquiring identical materials.

3.3.5 Staff Development : Ncgobo (1986) points out that cooperative staff development programmes deal with the sharing of resource facilities for training information professionals. It includes the offer of formal training, the organization of workshops, conferences, and joint research projects.

3.4 Benefits of Library Cooperation

Library cooperation and resource sharing have a number of benefits that could be felt by the participating libraries. According to Swell(1981), these benefits include avoiding of unnecessary duplication of materials and thus preventing calls for additional finance for this purpose, in addition to the fact that it enables users of existing services to have access to a wider range of materials, collections, and services. According to Rouse and Rouse resource sharing and cooperation can play a role in satisfying the national and community objectives; They pointed out that few countries can avoid the pressure of the contemporary situation in which access to relevant information is essential to achieve national

objectives, while at the same time the output of relevant information is rapidly increasing. In this context, Sewell in (1981) suggested that a national strategy for providing the necessary library and information services becomes of paramount importance for the achievement of national objectives. There are also other benefits of cooperation pointed out by Sewell (1986), and Rowley (1992). Sewell indicated that cooperation help institutions to establish better working relationships as a result of continued interaction and exposure through staff exchange, visits, ..etc. Rowley, on the other hand, argued that cooperation facilitates information technology transfer from one institution with a variety of information technology tools such as computers, microfiche, CD-ROM,etc to one which only beginning to build up information technology awareness environment.

3.5 Difficulties Facing Cooperation

A number of difficulties and constraints hamper the achievement of the above mentioned benefits of cooperation; Sewell (1986) stated that without adequate preparatory study and analysis, cooperation and resource sharing may not be initiated on the most appropriate basis or with clear objectives. He further pointed out that without well planning, a continuous education programme for staff, and a well conceived organizational structure, institutional and personal barriers may prevent effective cooperation to take place. On the other hand, Rowley (1992) asserted that the operation of resource might not

include adequate arrangement for monitoring services and for responding to the feed back of information thus received. This may cause undue pressure on certain participatory institutions. According to him, it could also lead to a lack of perceived benefits for members in general. Rowley also indicated that technical incompatibilities between participating institutions may occur and it could be difficult to overcome them once a badly planned scheme has been inaugurated. He further pointed out that there may have been a lack of recognition that the inauguration and operation of cooperation and resource sharing arrangements usually cost money, and that benefits may not be seen immediately, but only become apparent in the medium and long term, and that cooperation and resource sharing schemes could be negatively affected by poor transport and communication, especially in developing countries and rural areas.

Other problems that may affect cooperation ventures according to Ngcobo (1986), include the following:

- Lack of proper information infrastructure;
- Language barrier;
- The fear of possible loss of national autonomy as the price for membership in a regional scheme; and
- Legal and administrative constraints. These include national policies, customs and excise, and copy right acts which may resist the steady flow of information across borders in international cooperation schemes.

3.6 Library and Information Networks

3.6.1 Motivation for Library Networks

The growth in the number and types of library and information networks is motivated by a number of factors. These networks also have a number of objectives that they intend to achieve. According to Rouse and Rouse (1992), Financial constraints experienced by libraries in the 1970's is a major contributing factor to the growth of library and information networks. They further indicated that there are a number of equally important factors that may be grouped under the following headings:

1. **Functional** : To assist the participating libraries to improve their ability to perform their basic functions of matching user information needs by providing access to wider and richer information sources.
2. **Information Explosion** : The tremendous increase in information generation makes it impossible for individual libraries and information service units to be self sufficient.
3. **Technological Advancement** : The advances in communications technology has made it quite possible to integrate multimedia information into communication channels for dissemination.
4. **Techno-Information Gap** : This relates to the wide disparity in information availability and information technology between the richer and the poorer information centres. This has played a motivating role for networking as a means of resource sharing between these centres.

Library and information networks have a number of objectives

that they intend to achieve, These objectives include the following, according to Rowley (1992):

- To reveal the contents of a large number of libraries or a large number of publications especially through accessibility of catalogue databases; OPAC interfaces will make it easy to reveal the resources of any number of individual libraries.
- To make the resources thus revealed accessible to individual libraries and individual users when and where they may need them.
- To share the expense or work involved in making these resources available through exchange of records and associated activities. This in turn will help in controlling the costs of these activities to individual users and libraries.

Furthermore, Rogerson (1992) points out the following potential applications of library and information networks;

- Value added services such as electronic mail, and file transfer;
- Exchange of bibliographic records;
- Inter-library loan;
- Distribution and publication of electronic documents such as electronic journals; and
- End-user access to other databases such as those available on the on-line hosts and others.

3.6.2 Types of Library Network Services

Within the broad area of information retrieval, the applications of computer technology have had a great impact on the types of service available throughout resource sharing networks. These services include storage and retrieval of data such as factual and bibliographic data, document ordering and delivery services, general computer services, and support for group communication and discussion making. According to Rowley (1992), the most widely used library networks can be described by four major types of services, namely :

1. Shared cataloguing;
2. On-line reference;
3. Shared circulation; and
4. interlibrary loan.

Rowley also points out that shared cataloguing is the most fully appreciated of computer applications to library services, and that there is a growing endorsement of bibliographic information retrieval services referred to as "On-line reference services". This is done by large research and public libraries. In this case separate resource libraries are accessed by multiple requesting libraries affiliated with the individual organizations accessing the databases.

The resource sharing aspect of these computer networks , according to Rouse and Rouse (1980), is that time-sharing computers and telecommunications systems are used to facilitate simultaneous access of data bases by multiple requesting

libraries.

On-line circulation systems are another type of network that is recently expanding beyond the domain of a single library and its branches.

3.7 Management Issues

3.7.1 Organization Types

There are a number of network organization types. These range from interlibrary to international networks. Library network members may represent the same types of libraries or they may represent different library types. Rouse and Rouse pointed out the following as the major organization types of library networks:

- Interlibrary network;
- Intrastate network;
- Interstate network;
- National network; and
- International network.

These different organization types are determined by the different levels of cooperation among libraries and information centres. According to the UNESCO programmes in information services, cooperation or resource sharing is described as an aspect of library and information services which blossoms from national through regional to international levels. The prevailing economic conditions in many countries, especially the Third World countries, makes the idea of self sufficiency

in information gathering unrealistic, and interdependence in resource sharing inevitable, Ncgobo (1986).

3.7.2 Network Structure

The structure of library networks, according to Rouse and Rouse(1982), and Fitzgerald (1992), can be described in terms applied to computer networks. However, there is an important difference between these two types of networks. This difference relates to the way they perform. Computer and telecommunications networks are mainly electronic message switching networks. Library networks, on the other hand, focus mainly on two types of activities. These are message transfer and document or information delivery.

Network structure can be dealt with in terms of elements, configuration, and levels. The configuration of a particular network varies according to the objective of that network. The elements of a library network consist of nodes or processing centres and arcs or possible paths of communication. Rouse and Rouse (1980) also pointed out that the network configuration refers to the pattern in which arcs and nodes are connected, and that the levels of a network indicate different stages in the processing of activities.

There are four common configurations that are employed in both the computer and telecommunications fields as well as the library and information field. These configurations are the

star, distributed, ring, and the hierarchical configurations, Dempsey (1992), Fitzgerald (1990), Ismael (1989), and Were (1990).

3.7.2.1 Star Configuration

The star configuration is a totally centralized network configuration. Activities or services provided by the network are controlled by the central node. It entails that one network member holding substantially all resources, with all other members utilizing these resources. A common example of the star configuration is the interlibrary network of a large metropolitan library with multiple branches. Service is administered from decentralized locations throughout the city, while management of the network is centralized.

in the star configuration. which is purely centralized, communication routes do not exist between the outer nodes (refer to **Figure 3.1**). All communication is controlled by the central node.

From a management viewpoint, the star configuration is attractive because of the centralization of the record keeping activities and major processing with one staff instead of being duplicated by the multiple processing centres . From the users' point of view, on the other hand, this configuration is very insufficient because of the time delay experienced by the user which involves the central node processing time in addition to time required by each additional library from the outer nodes.

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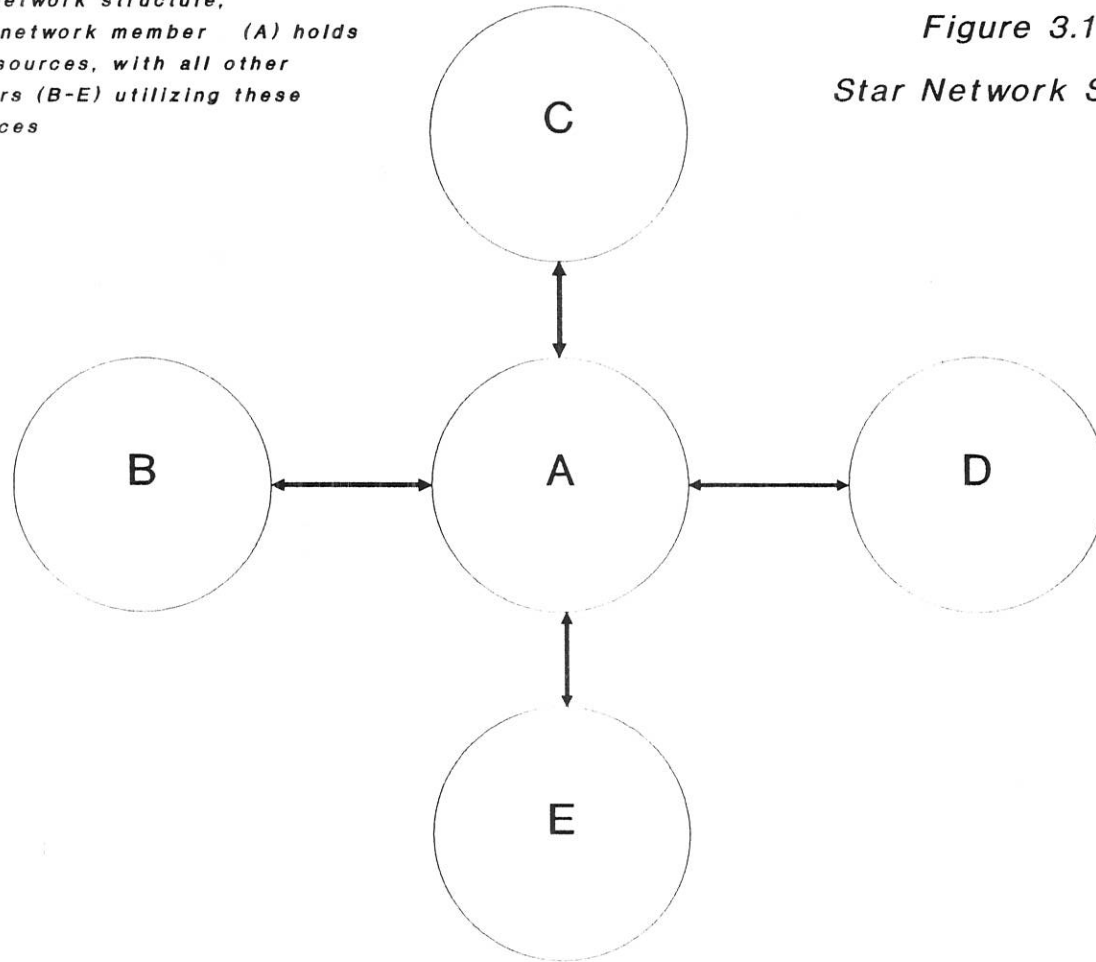
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*Star network structure,
one network member (A) holds
all resources, with all other
members (B-E) utilizing these
resources*



*Figure 3.1
Star Network Structure*

3.7.2.2 Distributed Configuration

The distributed network configuration, also called the "mesh" network, in contrast to the star configuration, is a decentralized network.; Each node has the alternative of communicating with every other node in the network as well as to the host (refer to **Figure 3.2**). It is composed of members with equal but different resources, with all members able to call directly on the resources of all other members. There is no ranking or order imposed on the communication links. For instance, each library or node responsible for generating an interlibrary loan request is responsible for choosing the next processing node for unfilled requests, (Fitzgerald 1990, Ismael 1989, Were 1990).

3.7.2.3 Ring Configuration

Similar to the case in distributed configuration, in the ring configuration there is no central processing node. The ring configuration is distinguished from the distributed one by the communication or processing order; Once a request enters the network at a given node i and further processing of that request is necessary, the request can only be sent to node $i+1$ (refer to **Figure 3.3**). This fixed sequence of nodes is insufficient for some processing activities. For instance, in the case of a request for interlibrary loan, when library i knows that library $i+2$ owns the item requested and library $i+1$ serves only as a switching centre. However, this structure could be decided upon when there is a need to filter requests

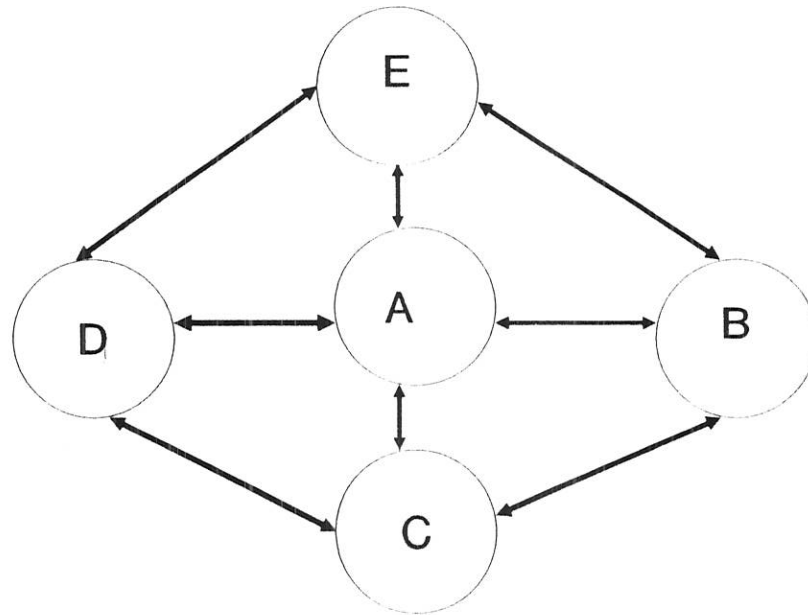


Figure 3.2
Distributed (Mesh) Network Structure

Distributed Network Structure
All network members(A,B,C,D,E)
hold, in theory, different
resources, which they share with
one another

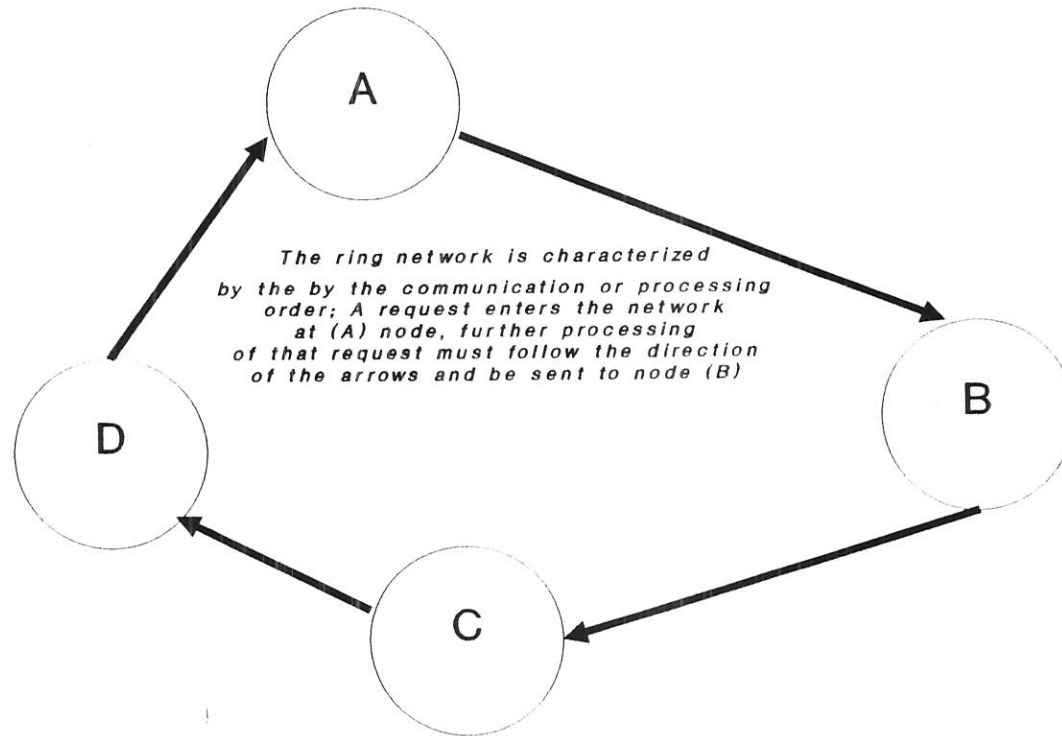


Figure 3.3
Ring Network Structure

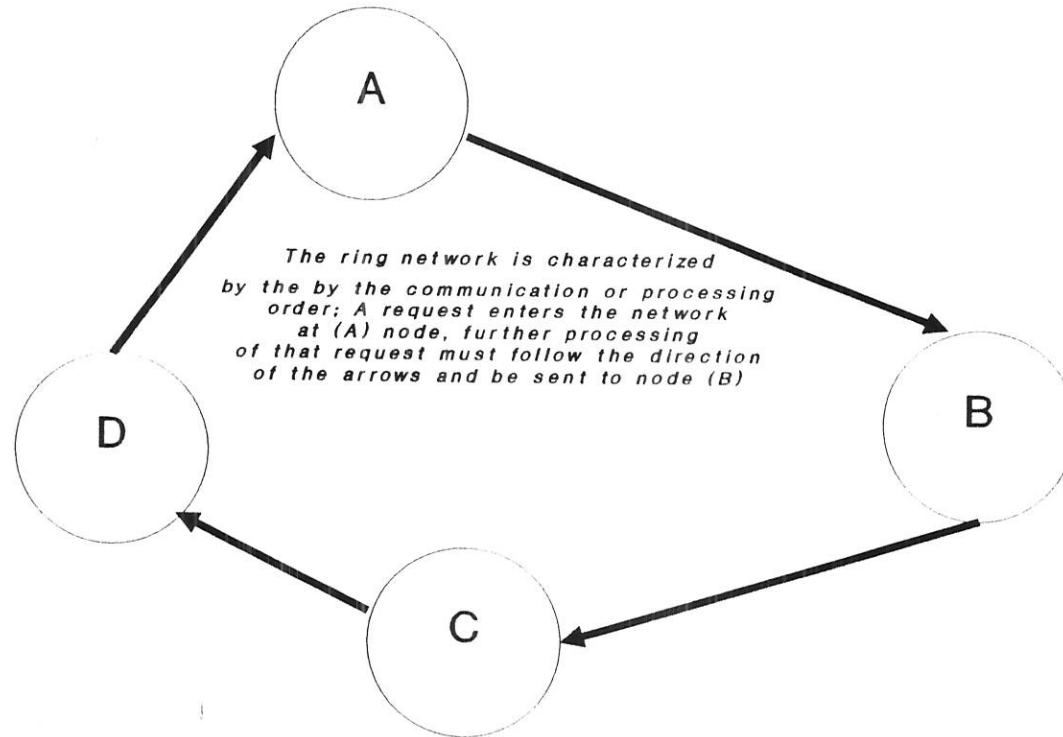


Figure 3.3
Ring Network Structure

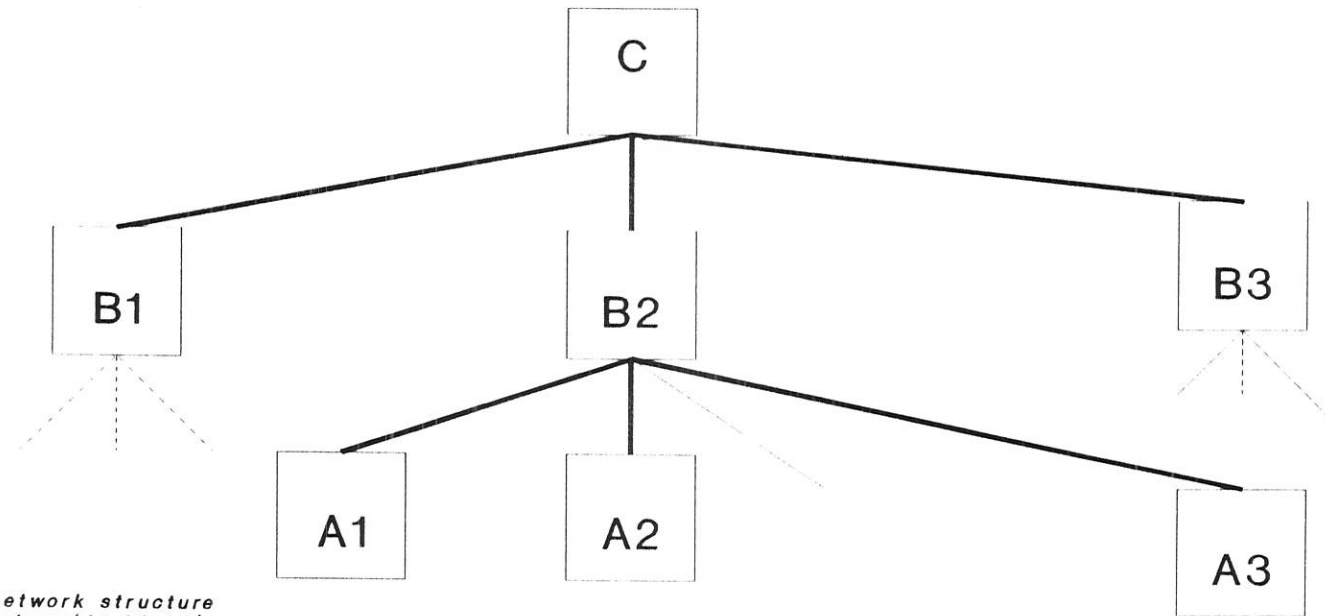
for conforming with agreed on policies. For example, a bibliographic centre may serve as an intermediate point to verify all requests before sending them on to the next node in the sequence, (Rouse and Rouse 1980, Ismael 1989),

3.7.2.4 Hierarchical Configuration

The above three configurations according to Rouse and Rouse (1980) deal with lateral activity; The hierarchical structure deals with vertical routing of information. This, according to them, refers to movement in a hierarchy. As we move up the hierarchy, there are usually fewer nodes, each of which has greater responsibility and access to more comprehensive collections, (refer to **Figure 3.4**).

The hierarchical network entails that members sharing resources locally, passing unsatisfied needs along to the next greater centre. The collection of libraries in a hierarchical configuration have more comprehensive collection in the upper level of the hierarchy. This entails that the probability of success for a request becomes higher as it travels from the lowest level to the top of the network, (Rouse and Rouse 1980, Ismael 1989, Were 1990).

According to Rouse and Rouse (1980), most library and information networks do not conform strictly to one type of configuration. Library network structure usually consists of a number of configurations. he cited the example of the ILLNET as a network structure which is a composite of the star,



*Hierarchical network structure
 Networks numbers(A1,A2,A3)
 share resources,with most of
 needs satisfied before requesting
 service to the next greater
 resource centre(B2),finally,
 the few remaining unsatisfied
 requests are referred to
 the library of last resort
 (C),which may be obliged
 to check other centres
 (B1,B3) to locate required
 materials.*

*Figure 3.4
 Hierarchical Network Structure*

distributed, ring, and hierarchical configurations. The ILLNET refers to the Illinois Library and Information Network, which is a statewide service, in the USA, managed by the Illinois State Library.

Kennedy (1979), cited by Ismael (1989), stated that for most library functions, the hierarchical or distributed network structure is intuitively more cost effective in terms of resource sharing. Nevertheless, according to him, they are not an easy to construct as a star network due to political and operational constraints.

3.8 Related Studies

The following related studies are significant in that they deal primarily with third world countries that are facing some library problems. While it is true that their problems are similar to the problem of libraries in Sudan, there are two major observation that can be made; Firstly, there have been more research studies done in the area of library and information services in these countries. Secondly, there have been many attempts, in these countries, to design cooperative library programmes.

The study of Ismael Abdullahi " A Study of Cooperative Programmes among University and Special Libraries in Ethiopia, Kenya, and Uganda", aimed at examining the nature and extent of cooperative activities in these countries, and to design "the

most appropriate" model for a cooperative programme for university and special libraries in these three countries. His study revealed that the majority of libraries have a great interest in an organized library network. It also showed that most of the cooperation among libraries is equally maintained by formal as well as informal agreements. His study also revealed that most of the problems affecting library cooperative activities in the three countries comprise the following;

- Inadequate number of professionals;
- Insufficient funds;
- Lack of proper equipment;
- Inadequate communication system;
- Lack of bibliographical control;
- Lack of effective library association; and
- Lack of recognition for library and librarianship.

Based on his findings, he proposed a network model and a plan of action to establish a network system. The network programme includes cooperative acquisitions, central order office, union exchange list, and clearing house. He suggested that the network be implemented in a two-phase plan; Phase one deals with the development of tools for resource sharing, and phase two describes the planning for resource sharing.

Gashaw Kebede of Ethiopia, in his study "Agricultural Information Network for Ethiopia" assessed and discussed the

relevance and viability of the cooperative approach by forming a network of existing agricultural information service units in Ethiopia. This aimed at addressing commonly faced shortcomings in agricultural information provision. The results of his study revealed shortages in information sources, skilled personnel, and equipment and facility. It also revealed that cumbersome organizational structures were widespread, and the absence of standardization and bibliographic control tools.

In his study, he identified feasible areas for a network, namely, establishing union catalogue of holdings, list of local publications, limited interlibrary loan, and training and standardization. He also made some recommendations to initiate the network and make it operational.

Nega Alemayehu (1992), in his study " National Labour Information Network for Ethiopia", surveyed the existing situation and infrastructure facilities in the country. His survey results indicated that existing labour information facility is inadequate and deficient, and that the organization of data and information is very poor.

The objective of his study was to link together organizations concerned with labour matters in a network like structure so as to solve some of the existing problems and provide better services. In this context, he discussed a plan for National Information Network for Ethiopia (NALINET). He suggested the formation of a coordinating body and a Steering Committee in order to initiate the network. His study also identified a

number of functions that would be provided by each participant and the focal point of the network.

CHAPTER 4
FINDINGS OF THE STUDY

The purpose of this chapter is to present, analyze, and discuss the data collected through questionnaires, interviews and observation on medical information users and the services and facilities at the surveyed medical libraries . As stated earlier in chapter one of this study, there are two types of questionnaires used for this study namely, a questionnaire for medical information users, and a questionnaire for medical librarians. The general objectives of the questionnaires are :

- To collect information about the users' information needs and their information seeking behaviour;
- To collect information about the university medical library services and facilities;
- To collect information on the existing cooperative activities among university medical libraries; and
- To collect information about the attitudes of medical librarians towards a cooperative (networking) programme among university medical libraries.

The data collected will be presented and analyzed under the following headings:

- Medical Information Users; and
- Medical Libraries.

4.1 Medical Information Users

As indicated in chapter 1 of this study, the population of the medical information users constitutes researchers, postgraduate students, and undergraduate students. The sampling method used is the purposive sampling method. According to Rao (1983), in a purposive sampling, the sample units are chosen by design, that is by choice not by chance; a sample unit is chosen which is thought to be typical of the population with regard to the characteristics under investigation.

Table 1 shows the response rate from each user category. As indicated in the table, the total number of questionnaires returned by the respondents are 31 out of 48 distributed questionnaires, giving a response rate of 64.6%. Out of the 31 returned questionnaires, 19.4% were returned by researchers, 29% by postgraduate students, and 51.65 by undergraduate students.

The objective of the user survey was to collect information about the users information needs and their information seeking behaviour, in addition to their evaluation of the information services they have access to. The data collected about the medical information users will be presented under the following headings;

- Information sources mostly used;
- Types of information services preferred;
- Users evaluation of the services.

4.1.1.1 Information Sources Mostly Used

Books are the most frequently used source of information by the 31 users who responded to the questionnaire. (93.8%) of the respondents said that they referred to books in order to get the information

TABLE 1
Response Rate by Different User Categories

User Category	Number of Respondents	% of Total
Researchers	6	19.4
Postgraduate Students	9	29
Undergraduate Students	16	51.6
Total	31	100

they needed. On the other hand, only (6.4%) of the respondents indicated that they referred only to current journals to satisfy their information needs. Current journals are the second mostly used source of information; (58%) of the respondents who used books stated that they also referred to current journals. Those who used books indicated that they referred to other sources as well. table 2 shows the frequency

of use of other information sources by those who used books as their major source. As indicated in the table, the total number of those who used books as their major source of information is 29 user out of the 31 respondents. Out of the 29 users, 48.3% indicated that they also used current journals; 17% used handbooks; 13.8% used abstracting journals; 10.3% used indexing journals; and 10.3% used CD-ROM databases.

TABLE 2

Rate of Use of Other Information Sources Besides Books

Sources	Frequency N =29	% of Total
Current Journals	14	48.3
Handbooks	5	17.2
Abstracting Journals	4	13.9
Indexing Journals	3	10.3
CD-ROM Databases	3	10.3
Total	29	100

The respondent were also asked how they kept abreast with the latest information in their fields of specialization. Table 3 shows the users' means of keeping abreast with latest information. As indicated by this table, 67.7% of the respondents said they scanned the latest periodicals in their

respective libraries; 12.9% discussed with their peers; 12.9% attended conferences and seminars; and 6.55 % communicated with colleagues in order to keep abreast with the latest information in their respective fields of specialisation.

TABLE 3

Means of keeping Abreast with Latest Information in One's Field of Specialization

Means	Frequency N=31	% of Total
Scanning Latest Periodicals	21	67.7
Discussions	4	12.9
Attending Conferences	4	12.9
Correspondence	2	6.5
Total	31	100

4.1.2 Types of Information Services Preferred

In order to identify the information services that are highly preferred by users, they were asked to choose from a list of information services the one or ones that are mostly preferred by them. Table 4 shows the rate of information services preferred by the respondents. Out of the 31 respondents, (22.6%) said that they preferred reference and referral services. the same proportion (22.6%) stated that they preferred literature search services. 16.1% indicated that they preferred translation services; 9.7% abstracting services; 9.7% selective dissemination of information (SDI) services; 12.9% indicated that they preferred research in progress services; and 6.4% stated that they preferred current titles services.

4.1.3 Users' Evaluation of the Services

in order to investigate the users' satisfaction with the services and the information they have access to, , they were asked whether they thought the information they get was completely, fairly, or not at all adequate, and whether it was timely and reliable. Table 5 shows the general users' assessment of their respective libraries. As shown in the tables The majority (64.3%) of the 28 users who responded to this question indicated that the information they had access to was fairly adequate. the remaining (35.7%) of the respondents stated that the information they get is not at all adequate. On the other hand, (42.9%) indicated that the information service available was timely, whereas the majority (57.1%)

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stated that the information service they had access to was untimely.

As for the reliability of the information available in the respective libraries, the majority of the respondents (71.4%) said that it was reliable, while (28.6%) indicated that the information they got in their libraries was unreliable.

TABLE 4
Information Services Preferred by Users

Type of Information Service	Frequency N=31	% of Total
Reference and Referral service	7	22.6
Literature Search	7	22.6
Translation	5	16.1
Research in Progress	4	12.9
Abstracting	3	9.7
SDI	3	9.7
Current Titles	2	6.4
Total	31	100

TABLE 5
General Assessment of One's Library

Assessment	Frequency N=28	% of Total
Adequate		
-fairly	18	64.3
-not at all		35.7
Timeliness	10	
-timely		42.9
-untimely	12	57.1
Reliability	16	
-reliable		71.4
-unreliable	20	28.6
	8	

The respondents were also asked whether they used to go to other university medical libraries in order to satisfy their information needs. They were also asked to name those libraries they used to go to. Seven (22.6%) out of the 31 respondents said they were satisfied with the information they got within their university medical libraries and that they would not go to any other library. The rest of the respondents stated that they would go to other libraries in order to meet their

information needs. Of those who used other libraries than their own, (60.8%) frequented the university of khartoum Medical library, whereas (39.2%) used the British council Library.

4.2 Medical Libraries

The other type of questionnaire was distributed to the university medical libraries. As mentioned in chapter 1 of this study, questionnaires were distributed to six out of the twelve university medical and health science libraries. However, the number of the sample libraries came down to four, as two of the libraries did not respond to the questionnaires despite repeated efforts made in writing and in person. This necessitated their exclusion from the sample.

The questionnaire consisted of three parts; Part one deals with general information about the library. Part two concentrates on information about the existing cooperative activities among the different university medical libraries. Part three surveys the opinions of medical librarians as to the establishment of a cooperative programmes among the university medical libraries in the Sudan.

This questionnaire is in agreement with the questionnaire designed by Ismael Abdullahi in his Study of Cooperative Programmes Among University and Special Libraries in Ethiopia, Kenya, and Tanzania, which he carried out in partial fulfilment of his PhD programme in library and information studies . His questionnaire was modified to suit the objectives of this study.

The data collected about university medical libraries will be analyzed and discussed under the following three major headings:

- Information on Libraries;
- Information on Cooperative Activities; and
- Network Opinion Survey.

The findings are presented, analyzed, and discussed below.

4.2.1 Information on Libraries

The objective of this part of the questionnaire is to collect information about the following aspects of the libraries; library personnel, organizational units, library acquisitions, library holdings, cataloguing and classification rules used, services provided to users, and library equipment.

4.2.1.1 Library Personnel

Table 6 shows that the total number of employees in the four surveyed libraries is 34. Half of this number are clerks while the other half constitutes professional librarians. Out of the 17 professionals, 3 hold Master's degree in library science, 7 are with Bachelors, 6 with Postgraduate Diplomas, and 1 with an Undergraduate Diploma. It was observed that clerks usually worked as library attendants, sometimes they even perform jobs usually performed by professional librarians such as classification and cataloguing. This is probably due to the severe shortage in qualified library personnel.

TABLE 6

Educational Background of Library Personnel

Type of Qualification	Number	% of Total
MA\MSc	3	9
BA\BSc	7	20.5
Postgraduate Diploma	6	17.6
Undergraduate Diploma	1	2.9
Secondary School Certificate	17	50.0
Total	34	100

4.2.1.2 Organizational Units

Table 7 shows the organizational units within the surveyed medical libraries. As shown from this table, all surveyed libraries have technical services department. On the other hand, the Acquisitions, Serials, and Reference Departments exist in three of the four surveyed libraries, whereas only one library has a separate administrative department.

TABLE 7

Organizational Units in the Surveyed Libraries

Organizational unit	Number of Libraries N=4
Acquisitions Dept	3
Technical Services Dept	4
Circulation Dept	4
Serials Dept	3
Reference Dept	3
Administrative Dept	1

4.2.1.3 Library Acquisitions

The total number of books purchased in the previous year by the three libraries which responded to this question was 760 titles. Al Azhari University purchased the maximum number of titles which is 400 titles, whereas the College of Medical Laboratory Science purchased the minimum quantity which is 60 titles.

As for journals, the total number of journal titles purchased by the three libraries is 75 titles. The maximum is 50 title purchased by the University of Khartoum Medical Library, while the minimum is 10 titles purchased by the College of Medical laboratory Science. Table 8 shows the number and range of library materials purchased in the previous year.

4.2.1.4 Total Number of Library Holdings

Table 9 shows the total number of library holdings of books, journal titles, and non-print materials. As shown in this table, the total number of books in all surveyed libraries is 26000 titles. The number of journal titles is 1010 titles. As for non-print materials, only one library, that is the University of Khartoum Medical Library, provided information on this aspect; their total holdings of non-print materials is 12 titles of CD-ROM Databases.

TABLE 8

Items Purchased in the Previous Fiscal Year

Type of Material	Total Number	Range
Book Titles	760	06 - 400
Journal Titles	75	10 - 50

TABLE 9

Total Number of Library Holdings

Type of Material	Total Number	Range
Book Titles	26000	1200 - 13000
Journal Titles	1010	50 - 420

4.2.1.5 Cataloguing and Classification Rules Used

Table 10 shows the classification and cataloguing rules used in the surveyed libraries. As shown in this table, three of the four libraries stated that they used the Anglo-American Cataloguing Rules (AACR), whereas one library stated that it uses the second edition of these rules (AACR2). In effect, all the four libraries use AACR.

As for the classification schemes, three libraries said they used Dewey Decimal Classification (DDC) Scheme, whereas one library, that is the University of Khartoum Medical Library, said that they used the Bliss Bibliographic Classification Scheme. The Medical librarian at the University of Khartoum Library indicated to the investigator during his interview that the library was changing over to the DDC. This change is in line with the recommendations of Carpenter's Report mentioned in chapter two of this study.

The librarians were also asked whether they held Union Catalogues for their library materials. To this question, two of the libraries answered in the affirmative, while the other two surveyed libraries answered negatively.

TABLE 10

Cataloguing Rules and Classification Schemes Used

Cataloguing Rules	Number of Libraries	Classification Schemes	Number of Libraries
AAC	3	DDC	3
AAC2	1	BBC	1

4.2.1.6 Services Provided to Users

Figure 4.1 shows the services provided to users in the four surveyed libraries. As indicated in this chart, all four surveyed libraries provided reference services ; Three libraries provided literature search services and document delivery services. On the other hand, only one library, the Library of the College of Medical Laboratory Science, provided Selective Dissemination of Information (SDI) services. One library provides Compiling Bibliographies services.

4.2.1.7 Library Equipment

Figure 4.2 shows the technology equipment available in the four surveyed libraries. From this chart, three of the four libraries have photocopying machines, two libraries have printing equipment, two libraries have micro-computers, and one library has microfiche and microfilm readers.

Figure 4.1
Library Services

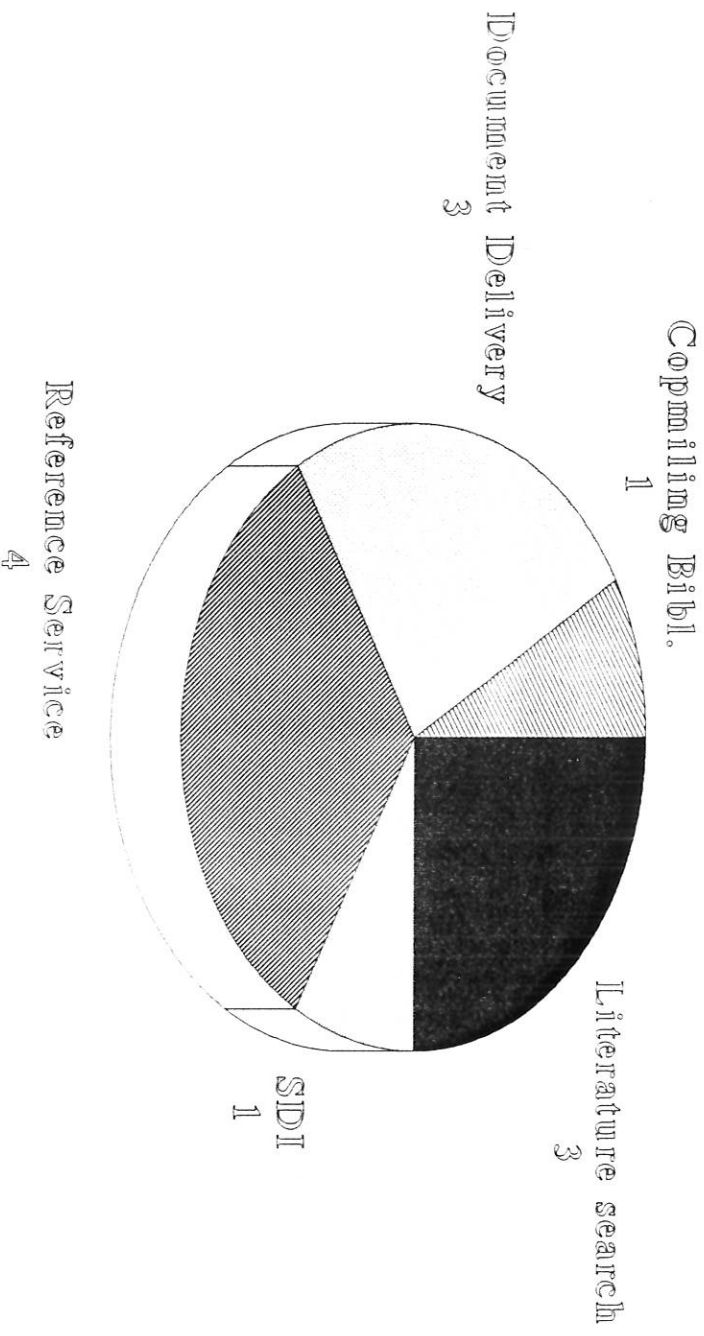
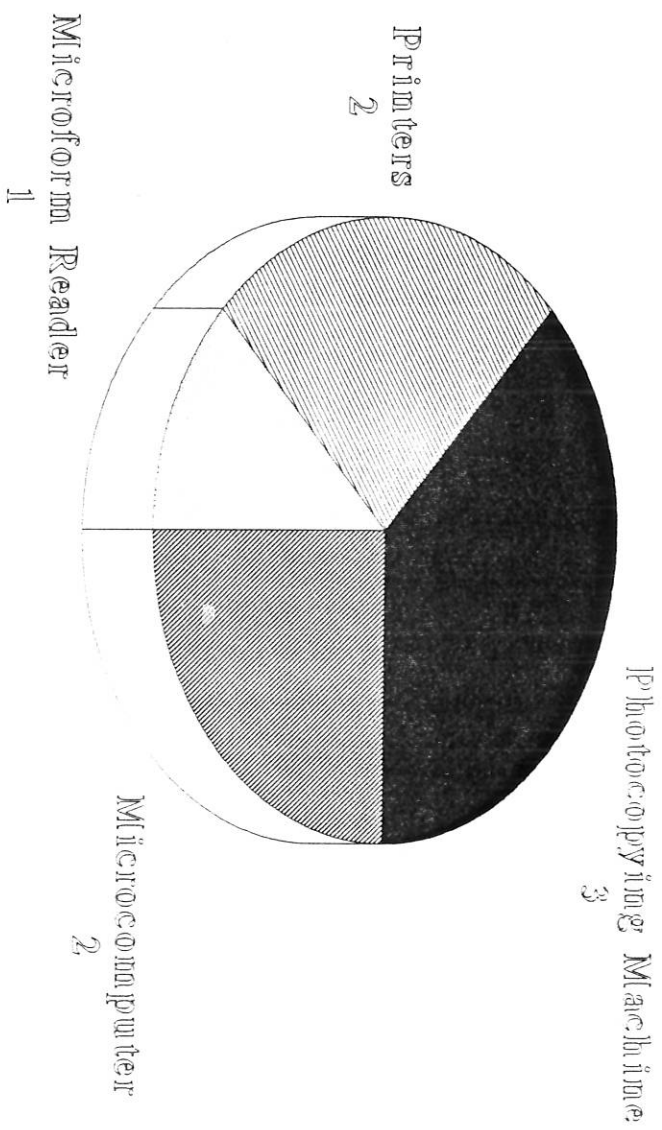


Figure 4.2
Library Equipment



4.3 Information on Cooperative activities

This part of the questionnaire dealt with information on existing cooperative activities among the surveyed medical libraries. The objective of this section is to identify the existing pattern of cooperation and to highlight the difficulties that hamper resource sharing and cooperation among university medical libraries in Sudan.

In the first question, librarians were asked whether their libraries were members of any local, regional, or international library and information network. Two libraries, the university of Khartoum medical library and the library of the College of medical laboratory science, stated that they were members of the Healthnet organization. The two other libraries indicated that they were not members of any kind of library network

In another question, the librarians were asked to specify the cooperative activities, if any, in which they were taking part. All surveyed libraries stated that they took part in the exchange of publications, gifts, and photocopying services. On the other hand, no library was engaged in cooperative cataloguing, cooperative acquisitions, or interlibrary loan. The libraries were also asked whether they maintained these cooperative activities by formal or informal agreements. To this question, two libraries answered that they maintained cooperation by informal agreements while two libraries did so by formal and informal agreements.

In the last question of this part, librarians were asked to

rank the problems that affected or would affect the cooperative activities according to their importance. All libraries ranked the problems of insufficient funds and inadequate number of library professionals as very important. Lack of proper equipment, and lack of bibliographic control were ranked as very important by three of four responding libraries. One library, however, ranked all the above mentioned problems as very important

4.4 Network Opinion Survey

The objective of this part of the questionnaire is to survey the opinion of the medical librarians as to the establishment of a library cooperation and resource sharing programmes. In the first question of this part of the questionnaire, a number of cooperative activities were listed and the librarians were asked to rank them according to importance in their opinion. They were asked to rank the activities along the following scale:

- 1---highly desirable;
- 2--- desirable;
- 3---not desirable; and
- 4---no opinion.

The cooperative activities were listed under seven major headings, namely; Acquisitions, Cataloguing/Processing, Interlibrary Loan, Reference Services, Delivery Services, Storage/Preservation, and Education/Research.

Generally speaking, all libraries ranked activities either

highly desirable or desirable. The specific results were as follows:

A. Acquisitions: In the cooperative activities listed under acquisitions, cooperative acquisitions of journals ranked first; it was ranked highly desirable by all four surveyed libraries. Cooperative acquisitions of books was ranked highly desirable by three libraries. Union exchange lists, on the other hand, was ranked highly desirable by two libraries. Cooperative acquisitions of non-print materials was ranked as highly desirable by one library and as desirable by the three other libraries which responded to this questionnaire.

B. Cataloguing/Processing: Under the cataloguing/processing activities, the use of international Standard Bibliographic Description for network cataloguing was ranked as highly desirable by all surveyed libraries. The compilation of a union accessions list was ranked as highly desirable by 3 out of 4 libraries . Two of the surveyed libraries ranked the Union List of Serials as highly desirable. On the other hand, Union Catalogue of Non-print Material, and Catalogue Card Production were ranked as highly desirable by one library and as desirable by the three other libraries.

C. Interlibrary Loan : As for the cooperative activities listed under interlibrary loan, reciprocal Borrowing Services and photocopying Services were ranked as highly desirable by all of

the libraries surveyed. Interlibrary Loan service for Non-print Materials was ranked by all four surveyed libraries as desirable.

D. Reference : Abstracting and Indexing services were ranked as highly desirable by all surveyed libraries. Referral Services was ranked as highly desirable by two libraries.

E. Delivery Services: Access to Machine readable databases for reference and cataloguing purposes was ranked as highly desirable by 3 out of the 4 libraries that constituted the sample. The provision of a special truck delivery system, on the other hand was ranked as highly desirable by one library and as desirable by three libraries.

F. Storage/Preservation : A Storage Centre for monographic material was ranked as highly desirable by three libraries. a Storage centre for journals was ranked as highly desirable by all of the surveyed libraries.

G. Education/Research: The provision of personnel training under an Education/Research cooperative programme was ranked as highly desirable by all surveyed libraries. Two libraries ranked the provision of Joint Research Projects as highly desirable.

Medical librarians were also asked whether they would like to

participate in a network of medical libraries if they did not participate in any network. The answer to this question was unanimously in the affirmative. They were also asked to list five priority cooperative activities in which their libraries would be interested to operate. Three out of four listed the following five priority activities: Cooperative Acquisition, Cooperative Cataloguing, Reference Services, Interlibrary Lending, and Personnel Training. One library, however listed the following activities as of the highest priority : Interlibrary Loan, Exchange of publications, cooperative Cataloguing, Photocopying, and Joint Research Projects.

Librarians were also asked whether they thought their respective parent institutions would provide the financial support for their libraries' participation in a network of medical libraries. Two of the surveyed libraries answered in the affirmative, while the two other libraries responded negatively. Those who answered negatively to this question were asked where they would see the financial support coming from for the development of the network. They indicated that they expected the financial support to come from international and regional organizations such as the WHO, PADIS, and other donor organizations.

4.5 Interpretation of Data

The following possible inferences could be drawn from some of the survey findings:

- As shown by the study, books are the most used source of information. This, as expressed by the respondents, include a large number of text books. Users are also in need of more current journals.
- The study showed that the availability and usage of computerized sources of information are limited; There is a need to acquire more CD-ROM data bases. The study also revealed that most users are ignorant of or they do not know how to use some of the information sources such as abstracting and indexing journals. This calls for more user education.
- A considerable proportion of medical information users preferred translation services. This can be attributed to the Arabization policy introduced in 1991. This fact calls for the need to acquire more sources of information in Arabic, especially textbooks and journals.
- Most users indicated that the information available to them is not timely. This implies that most of the information sources available are not up-to-date. This is probably due to the financial constraints faced by universities in the country. Bearing in mind the ever increasing cost of subscription to certain indexing and abstracting services, such as Chemical Abstracts, which makes them particularly vulnerable to cancellation, it seems that alternative subscription to CD-ROM data bases may have advantages of space saving and also of cost saving where they can be acquired by donation.
- The study revealed that the university of Khartoum medical library is the most well established of all the surveyed

libraries, and that users from other universities usually go there to fulfil their information needs.

- The study showed that there is a severe shortage of qualified staff within the medical libraries. During the investigator's interviews with the medical librarians, they frequently expressed concerns over their grading and status. According to A.C. McDonald who visited the university of Khartoum library in 1993, improved grading which reflect equivalent academic status are essential for the motivation and retention of staff. It is reported that staff tend to leave the library once they have gained their qualifications and training for posts elsewhere with better employment conditions, McDonald (1993).

It is also noticed that the proportion of staff with higher degrees, i.e Masters and/or PhDs, to those with lower degrees is inadequate. This fact draws the attention to the need for staff training and development for better library services.

- The libraries surveyed took part in limited cooperative activities such as exchange of publications and gifts.

Nonetheless, the medical librarians expressed their interest and willingness to participate in a wider range of cooperation. They expressed their willingness to participate in cooperative acquisitions, cooperative cataloguing, interlibrary loan, storage/preservation, and education/research cooperative activities. This willingness on the part of the librarians can play a vital role in the success of the proposed cooperative programme.

CHAPTER 5

INFORMATION TECHNOLOGY IN LIBRARY COOPERATION

This chapter discusses the role and application of information technology (IT) in libraries , especially in academic libraries. The chapter starts with an overview of library computerisation and the different functions performed by computer-based library systems, and then proceeds to discuss the application of computer networking to libraries and mentions how libraries are benefited by IT in establishing cooperative models. This chapter also discusses the emerging research and academic networks, especially the Internet, and their impact on the services offered by academic libraries, and their role in establishing effective cooperative programmes. The chapter closes with a discussion on the various services and facilities offered by the Healthnet to medical libraries in developing countries, and the possibility of benefitting from having access to the Healthnet in establishing a local network in the Sudan to be used by medical libraries for the effective implementation of at least some aspects of the proposed cooperative model.

The purpose of this chapter is to show to what extent modern information technology can be exploited, in the future, for the effective and efficient implementation of the proposed cooperative model in the Sudan.

5.1 Computers in Libraries

The use of computer-based systems in libraries is increasing rapidly nowadays. Computers are used almost in all library functions including cataloguing, circulation, acquisitions, and so on.

The wide use of computers in libraries and information units has been encouraged by a number of recent developments. One major development is that cheap micro computer systems are easy to access now which have a number of facilities suitable for library use. Another development is the increase in the availability of telecommunications networks at a low cost. These networks are used now by many libraries to gain access to external services including online shared cataloguing systems and online search services.

In order for a library to have access to or to participate in a library computer network, it should have its own computer system. That is, it should have automated at least some of its functions. This is realised by libraries acquiring turnkey systems or integrated library management systems. These systems began to appear in the market in the late 1970s and there are a number of companies throughout the world involved in providing such systems for libraries. Examples of these companies are the British company Automated Library Systems (ALS), Computer Assisted Library Information Systems (CALIS), and Computer Library Services International (CLSI). These companies sell off-the shelf library management software, but

libraries can also develop their own in-house systems.

There are a number of reasons driving libraries and information units to consider computerization. These reasons as outlined by Rowley (1993), are:

1. To deal with increased work load; computer systems help in handling workload with a consistent or decreasing staff.
2. To achieve greater work efficiency.
3. To introduce new services.
4. To benefit from cooperative and centralized library services such as sharing of catalogue records or having access to external bibliographic data bases.

The current trends in library management systems is to employ Open systems and User friendly interfaces. Open systems are compatible and can communicate with other systems. User friendly interfaces, on the other hand, help the user to input data to the system and to use the system output at the same time.

The development in these two aspects i.e Open systems and User friendly interfaces, have been achieved due to advances in technology. Most important of these advances is the improved standardization in the field of computers and telecommunications and the improvement in data communication networks.

5.2 Functions of Computer-based systems

Computer-based library systems perform a number of basic library functions. These include ordering and acquisition, cataloguing, Online Public Access Catalogue (OPAC) interfaces and other catalogue forms, circulation control, serials control, and interlibrary loan. In addition to this, computerized systems have also the advantage of enabling the library to share bibliographic data and other information resources with other libraries and information systems.

Two of the above mentioned functions will be discussed in some detail below, as they play an important role in library cooperation and resource sharing programmes. These are namely the OPAC and interlibrary lending.

5.2.1 OPACs

All library management software provide the facility of online access to bibliographic data bases. Some systems provide a simple enquiry function to be used by novice users. Others provide some advanced enquiry functions that could be used both by non-novice users and library staff. Most systems provide both phrase and keyword searching. There are other search facilities provided by OPACs including Boolean operators : AND, OR, NOT. There are also a variety of display formats available within OPACs. These include index display and full record display. Other OPAC features include dial-in access from remote locations. Another useful facility in some systems is the ability to create a catalogue on CD-ROM. Thus it can be said

that OPACs have the following broad functions:

- search systems;
- means for user-library interaction;
- access tool to the entire library holding; and
- an access tool to meet users' needs from outside the library
i.e from other libraries.

5.2.2 Interlibrary Lending Systems

These systems deal with the processing of items borrowed from collections of other libraries. This process include generating initial requests to other libraries, notifying users of the availability of requested items, keeping records of requested items, and keeping records of items on loan.

There are two major types of these systems; in-house systems and commercial systems. In-house systems are stand alone systems whereas commercial systems are modules in library management systems.

Interlibrary loan systems perform the following functions:

1. Loan requesting from other libraries.
2. Transmission of requests.
3. Receipt and loan, including the calculation of due date, and printing of arrival notification for the requester of the loan.
4. Returns. This includes logging of returns and the display of special instructions
5. Generation of overdue notes and recalls.
6. Handling of renewal requests to supplying libraries.

7. Generating chasers to libraries that fail to supply.
8. Generation of cancelation messages.

5.3 Library Networks and Resource Sharing

The use of computer networking is affecting now many areas of library activities and functions. This involves the use of networks for cooperation and resource sharing between libraries, for electronic document delivery and for network publishing. So, networks are now considered as a means that facilitate useful and efficient resource sharing in ways which are not possible otherwise.

Library networks were initially concentrating on shared cataloguing, but now other uses of library networks have emerged. These include automation of abstracting and indexing, and the automation of library circulation. The development of network information activities to libraries and end users is on the increase now. Some cooperative ventures like the OCLC (the Online Computer Library Center) are enabling users to have access to journal data bases whether local or remote.

These library networks depend mainly on telecommunications networks and computer systems. They have the following general objectives:

1. To reveal the contents of a large number of libraries especially through providing users with access to them by using OPAC interfaces;

2. To make these resources available to users through interlibrary lending; and

3. To share the workload and expenses of creating bibliographic databases through the exchange of catalogue records e.g MARC tapes.

Other functions of computer library networks include the distribution and publication of electronic journals, providing users with access to other data bases on online hosts and CD-ROM, providing E-mail services, file transfer services, and directory services.

There are two main categories of agencies that are involved in library networking, namely;

1. National libraries or centralized cataloguing services which create large bibliographic data bases.

2. cooperative ventures established by a number of libraries in order to benefit from resource sharing and cooperation, especially by creating a union catalogue data base.

There are a number of different technological options that can be selected to meet service requirements. These include simple networks based on PCs using a public mail service, or terminal to host network, or machine to machine network which will be the trend in the future.

5.3.1 Examples of Library networks

The following examples of statewide library networks show how the network can facilitate the provision of services across a number of libraries. These networks provide a tool for effective cooperation and resource sharing among different member libraries. Their services are available to users at any one of the member libraries.

The examples are taken from the United States as it is a pioneer in the field of library networks. The first example is the Illinois Library and Information network (ILLINET) Online (IO). It is one of the largest automated library network systems in the world. It is provided with administrative and technical support by the University of Illinois. The (IO) is composed of two linked components, namely:

1. The Library Computer System (LCS) which supports the activity of 35 academic libraries and provides interlibrary lending facilities to the network members.
2. Full Bibliographic Records (FBR): This is a statewide union catalogue which contains records for over 800 libraries in the state of Illinois.

According to Dempsey (1992), ILLINET has a user interface linking the two components of the network and presenting them to the user as one unified system. This interface which is PC based prompts the user for input formulates the query of the system it is appropriate to search. This interface has been locally extended to allow guided end-user searching of remote

commercial data bases.

The ILLINET Online (IO) also supports access to selected indexing and abstracting services from public network terminals. Access is provided through direct loading of files and software and via a communications link to the data base vendor. The IO has also access and link to other library network catalogue databases.

Another example from the USA is the OCLC which was originally known as the Ohio College Libraries Center and now it is known as the Online Computer Library Center. The services of this library network are used by more than 10000 libraries in 26 countries worldwide, Rowley (1993).

OCLC depends on extensive bibliographic data bases which have been built and shared by the network members. Although this network is a cooperative scheme with a central data base, participating libraries can process their materials locally. Members can have direct access to the central file, which is the Online Union Catalogue, in Ohio. This database contains about 10 million bibliographic records contributed by all members of the network. The union catalogue is on the OCLC MARC record format.

Records from the Online Union Catalogue are also used by member libraries for cataloguing purposes. New catalogue records are available for member libraries as soon as they are entered to the database. The Online Union Catalogue is also used by the

acquisitions systems of member libraries. There is also a facility for online serials control and interlibrary loans. In this latter case, the borrower specifies a search key term for the item he wants to borrow. The system then provides a bibliographic description allowing the user to name up to five possible lending libraries. The system then transmits the request to these libraries one at a time. OCLC also provides a search facility (CD450) which provides access to various CD-ROM databases.

5.4 Libraries and the Research Networks

Research and academic networks have emerged in many countries to connect university and other academic and research centers for the purpose of communication and resource sharing. These research networks provide a number of services including e-mail, file transfer, remote login, and others.

A communication infrastructure has been built upon the academic networks. This include discussion lists, electronic newsletters and electronic journals. A growing number of the information resources that are produced by libraries are becoming available on the networks. Academic libraries are beginning to consider the provision of access tools to these networks. Below is a brief discussion of some of the academic and research networks resources and the steps taken by academic libraries in order to exploit them. The discussion on these research and academic networks concentrates on the Internet as it is the largest and most frequently used network , and the Healthnet for the

relevance of the services it offers to the topic of this study.

5.4.1 Services Offered by Research Networks

The services, resources and facilities found in the networks which are useful for academic libraries are Document delivery, Network publishing, and network journals. There are many factors that have contributed to the electronic creation and delivery of documents. These factors, outlined by Dempsey (1992), include the ease of distribution, the growing sophistication of workstations and print technology, the widespread use of scanning and fax technology, in addition to the development of different text formatting standards.

5.4.1.1 Document Delivery

This is an important and growing aspect of network services. Some services will fax journal articles to subscribers. Some commercial journal publishers are studying the possibility of delivering their publications via academic and research networks. This may be in the form of fax images or a structured document of some other kind.

5.4.1.2 Network Publishing

This is the publication of documents on a file server connected to the network. The kind of documents published in this way include technical reports, newsletters, and numerical and other data which may be downloaded over the networks. Users can have access to such documents on the Internet by using the anonymous

File Transfer Protocol (FTP); a user establishes an FTP connection to a remote host and issues a GET command.

5.4.1.3 Network Journals

There are some serials which are published on the networks. These range from newsletters to reference journals. An example of these network journals is FAST News which is a current awareness service published on behalf of the International Society for Art, Science and Technology. Another example which is of interest to the library community is PACs Review, Dempsey (1992).

Because of the rising prices of journals and the problems they cause to the budget of libraries, libraries are beginning to consider taking advantage of these network journals. Publishers and libraries are exploring the possibility of the electronic delivery of document images, whether full text or typeset documents. But this is facing some problems, especially the problem of copyright and user acceptance. Such problems are now being faced by publishers of abstracts and indexes which are mounted on local and cooperative systems. The use of these products is being controlled and the majority of the network community in most cases do not have access to them.

5.5 Research Networks and Library Cooperation

The research networks establish connectivity between academic libraries and various national and other organizations. The academic library community use these networks for document

delivery, publishing, and the provision of remote login facility. Electronic mail is one of the most important services offered through the Internet. Academic libraries worldwide are using email extensively to transmit interlibrary loan requests between libraries and to allow the exchange of professional expertise through the increasing number of discussion groups worldwide. Internet also allows the transmission of full text articles including images and sound via the multimedia technology. Some of the specific applications of these networks by academic libraries include the following:

1. Transmission of interlibrary requests between libraries email.
2. Mutual access to bibliographic and catalogue data bases through OPACs.
3. Document delivery as support to interlibrary lending programmes.
4. Communication channel between members of cooperative ventures by email.

5.5.1 The Healthnet and Health Science Libraries

Healthnet, a computer-based telecommunications system, is a system of low-earth-orbit, groundstations, and telephone-based computer networks. This system is most suitable for developing countries because it functions reliably and inexpensively with little or no telecommunications infrastructure. It is established by SatLife, a nonprofit making institution

sponsored by NEC corporation in Tokyo, MacDonald (1994).

Healthnet was established for the purpose of providing the medical and health community in developing countries with means to communicate and share medical and health information with each other worldwide.

Healthnet, According to Robinson (1993), provides a number of services and facilities. These include the following:

1. E-mail -- for local networks within a country, Healthnet uses a special software and local telephone lines to send and receive email messages.
2. Conferences -- There is provision for both local and international conferences whereby users can form discussion groups to discuss matters of interest to them.
3. publications -- Healthnet distributes a number of electronic publications. These are namely; Healthnet News, African Medical Librarian Bulletin, WHO Library digest for Africa, Aids Bulletin, and Mothers and children.
4. Access to databases -- There is provision to a number of data bases by email at a low cost. These databases include data bases from the National Medical Library in the USA such as Medline, Toxline, etc.
5. Library Partnership Programme -- The establishing body, SatLife, sponsors the library partnership programme which facilitates access to medical literature for libraries in the developing countries.

The proposed model of cooperation between medical libraries in Sudan can benefit from the Healthnet groundstation found in the University of Khartoum Medical Library. Healthnet nodes could be expanded to cover other medical libraries to form a local network. This local network can be exploited to perform at least some of the activities of the proposed cooperative model. The email service provided by the Healthnet could be used for transmitting interlibrary loan requests between participating libraries. It can also be used to access international medical data bases such as Medline for bibliographic verification, and it can be used as a communication channel between member libraries. The email facility may be used as a document delivery means for journal abstracts form CD-ROM data bases in fulfilment of some aspects of the interlibrary loan programme. Through access to Healthnet, medical libraries can have a link to the Internet and the emerging Information Superhighway, so that they can benefit from the different information services and facilities provided by research and academic electronic networks. Nevertheless, the full utilization and benefit from the potentials and opportunities provided by modern information and communications networks will be realised only when medical libraries in Sudan have achieved a reasonable degree of automation.

CHAPTER 6

THE PROPOSED COOPERATIVE PROGRAMME FOR MEDICAL LIBRARIES IN SUDAN

6.1 Background

This chapter discusses the proposed cooperative programme for medical libraries in Sudan. The proposed programme is based on the literature review discussed in chapter 3 as well as on the findings of the study discussed in chapter 4.

Library cooperation in the library profession is not a new phenomenon. Librarians have long been concerned with library cooperation and library network development. This concern is due to a number of important reasons; First, the concept of library cooperation implies the removal of all barriers to library resources and information. Second, library cooperation implies equal access by any individual from any geographical location to the sum total of the world's knowledge resources. Third, no library can ever be self sufficient. According to Ifidon (1985), no library however rich in financial and bibliographic resources can ever expect to purchase every item or to meet all the demands of its clientele...The inevitable line of action in the circumstances should be much closer cooperation among the libraries. The prime objective of library cooperation is making library materials and information readily accessible to users through collection development and bibliographic control.

Many libraries in the developed world countries are enjoying the resource sharing programmes. Unesco and several other organizations, including professional organizations, have expressed the need and usefulness of resource sharing and library cooperation. UNESCO's UNISIST and NATIS programmes implemented by governments of member countries also aim at cooperation in information transfer at international and national levels. IFLA's idea of Universal Availability of Publications (UAP) is also based on the concept of resource sharing.

As suggested by Murthy (1990) the following guidelines are recommended for resource sharing among medical libraries:

1. Interlibrary loan should be accepted as an official programme in all Health Science Libraries.
2. Union catalogues on regions and city levels should be regularly compiled and updated.
3. All directories of medical specialists, medical research institutions and hospitals, should be compiled and kept up-to-date.

He further suggests that all medical and research libraries should prepare and circulate their duplicates and a list of the journals they needed in order to fill up the gaps in their serials holdings.

Nowadays a new concept in library cooperation has emerged,

namely library networks; A library network is a chain of libraries controlled and operated as one unit. Library cooperation and networking is an essential element in any national library service but it can be successful only when there is a carefully thought out plan behind it, Murthy (1990).

The findings of this study through questionnaires and interviews showed that there is a demand on the part of medical information users for access to relevant and up-to-date information and information sources. The study also showed that medical librarians are quite willing to participate in a cooperative (networking) programme for medical libraries. Consequently, based on the findings of the questionnaires and interviews, literature analysis, as well as the present library and information condition in the Sudan, a model for library cooperation is proposed.

6.2 The Model for Cooperation

The model for cooperation and resource sharing is derived from other approaches by experts from developing countries such as Adeyemi (1975) from Nigeria, Miniakit (1981) from Thailand, and Ismael Abdullahi (1989) from Ethiopia. The investigator also drew upon approaches presented in two training courses on Management of Information Resources and Networking held in Arusha, Tanzania, and Mombasa, Kenya, in 1990 and 1991 respectively.

in the proposed model of cooperation, various forms of cooperation ought to be established, namely:

- Cooperative Acquisitions;
- Cooperative Cataloguing\Processing Unit;
- Interlibrary Lending;
- Storage\Preservation; and
- Education\Research.

Below is a brief overview of some methods of cooperation and resource sharing in the most commonly practised aspects of library cooperation, namely cooperative acquisitions, cooperative cataloguing\processing, and interlibrary lending services.

Resource sharing in acquisitions may take a number of forms including the following:

- Sharing of selection tools such as Books in Print, British National Bibliography (BNB), Ulrich's Periodicals Directory...etc. Some of the smaller libraries which do not possess these tools will definitely benefit from sharing them with other larger libraries that possess them. This could be achieved by visits of librarians of the smaller libraries to the larger ones during which they consult the available selection tools.
- The passing of such ephemeral tools including publishers' catalogues and information cards after selection by the big

libraries to others that do not possess such tools.

- Exchange of accessions list among participating libraries.

Resource sharing in cataloguing and processing of library materials is very essential for medical libraries. The major problem confronted by those libraries is the lack of professional and skilled library staff who can carry out such technical jobs like cataloguing and classification. In this context, cooperation in cataloguing, processing may take the following forms:

- Exchange of bibliographic records i.e library catalogues.

This is beneficial in the case that a library may find a publication it needs to catalogue having been catalogued by another participating library, so it can easily download the bibliographic details from the other library's card. This type of cooperation is being proposed for which participating libraries are advised to standardise their cataloguing and classification tools.

- Another way of cooperation in cataloguing /processing is the sharing of cataloguing personnel. Along these lines, skilled cataloguers can be seconded to participating libraries lacking professionally qualified staff. However, this might not be feasible when all participating library lack the sufficient number of well qualified library personnel.

- Participating libraries may also produce and share indexes and abstracts from papers, reports, and even magazines and journals. Such activity will be invaluable for research purposes.

As for cooperation in interlibrary lending, this should be organized along some guidelines to avoid negative results arising from the feeling of autonomy by different participating libraries. Such guidelines may include that each participating library has to agree to build at least core collection in an area of specialization, so that each may need to borrow minimum number of materials and decrease heavy dependence on other libraries' resources. At the starting point of the cooperative programme, interlibrary lending may be limited to photocopies in the case of journals.

Interlibrary lending programmes can also be improved and sped up by introducing a truck delivery system in the initial stage which may be changed to an electronic delivery system.

6.3 Aspects of Cooperation

The proposed cooperative system being designed in this study is derived from the responses of the medical libraries questionnaire survey. Such a programme being recommended for Sudan is expected to achieve the following :

6.3.1 Cooperative Acquisitions

Goal: Provide collection development programme so as to enable the participating libraries to efficiently utilize the limited funding available

This will eventually lead to the system having the following output:

- a. Cooperative acquisition of journals.
- b. Cooperative acquisition of books.
- c. Exchange of union lists of books and journals.
- d. Cooperative acquisition of non-print materials.

This output will enable the participating libraries to coordinate and share responsibilities of the selection, acquisition, and purchase of library materials. It will also enable the participating libraries to agree on exchange of publications emanating from participating universities e.g. papers and research reports. It is suggested that a copy of these publications be deposited at the network headquarters.

6.3.2 Cooperative Cataloguing\ Processing

Goal: Provide national subject bibliographies on medical literature and access to library materials.

This aspect of cooperation will lead to the system having the following output:

- a. Use of International Standard Bibliographic Description

(ISBD) for network cataloguing.

- b. Compilation of Union Accession List.
- c. Compilation of Union List of Serials.
- d. Catalogue Card production.
- e. Compilation of Union Catalogue of Non-print Materials.

These outputs in turn will make it possible for the participating libraries to provide end users with access to more information and information sources. This can be specifically achieved by the compilation of union accession lists and union list of serials. The use of (ISBD) and cooperative catalogue card production, on the other hand, will help the participating libraries to avoid unnecessary duplication in cataloguing, and to standardize their processing tools and procedures so that they can cooperate more efficiently.

6.3.3 Interlibrary Lending, Reference, and Delivery Services

Goal: Formalize existing informal cooperation among participating libraries and introduce standardized borrowing and lending forms and procedures.

A. Interlibrary Lending

This will lead to the system having the following output:

- a. Reciprocal borrowing services.
- b. Photocopying services.
- c. Interlibrary loan services for non-print materials.

B. Reference Services

This activity will lead to the system having the following output;

- a. Provision of abstracting services.
- b. Compilation of indexes.
- c. Provision of referral services.
- c. Providing users with access to machine readable databases through Online Public Access Catalogue (OPAC).

C. Delivery services

This will enable the system to provide a special truck delivery system which might be replaced by an electronic delivery system in the future.

The output emanating from the interlibrary lending, reference, and delivery services will eventually enable the system to promote and improve resource sharing among participating libraries as well as to increase the information services available to end users.

6.3.4 Storage\Preservation

Goal: Provide storage and preservation programme.

This will lead to the system having the following outputs :

- a. Establishment of a storage centre for monographic materials.

b. Establishment of a storage centre for journals.

This in the long run will help in solving all problems of space and storage, as well as the preservation of library materials for the participating libraries.

6.3.5 Education /Research

Goal: Coordinate staff exchange, training and continuous education programmes.

This will lead to the system having the following output:

- Provision of personnel training;
- Provision of joint research projects.

The output of the cooperative education and research will enable the system to provide staff exchange and training programmes for professional upgrading such as in-service training and continuous education programmes. The system will also be able to promote research and development projects for the benefit of the participating libraries.

In order to formalize, maintain, and activate the above cooperative model, a university medical libraries network is being proposed.

Some aspects of this network are highlighted below.

6.4 Phasing

The plan for university medical libraries cooperative programme should be a phase-by-phase plan. Phase 1 will include the following aspects;

- Selection of network activities;
- Identification of participating libraries; and
- Preparation of resource sharing tools.

The selection of the network activities has already been proposed in the cooperative model. The activities to be performed by the network are based on the information needs of users and the current status of library and information services in the country.

As for the identification of participating libraries, this should be based on a number of criteria including willingness, capability and ,in the initial stage, proximity. Therefore, it is suggested that the network starts with the seven medical and health sciences libraries located within the capital city of Khartoum. These libraries are namely:

- University of Khartoum Medical Library;
- Ahfad University for Women Medical library;
- Al Azhari University medical library;
- College of Laboratory Sciences Library;
- Omdurman Islamic University Medical Library;
- College of Nursing Library; and
- College of Environmental and Public Health Library.

Preparation of resource sharing tools is a very important activity in the initial phase. It was found that the major problem facing library cooperation and resource sharing in the developing countries is the lack of resource sharing tools. The Unesco conference on resource Sharing in Southern and Central Africa, which was held in Tanzania in December in 1985, provided some useful guidelines for the preparation of resource sharing tools. This conference suggested that the following tools for resource sharing have to be developed as a primary phase for the establishment of a library network.

- a. National Bibliographies which could be supported by an appropriate legal deposit law.
- b. Union Catalogues ; in a modern library network, OPACs could be considered in helping to locate materials besides the manual system.
- c. Indexes and Abstracts. These are important in locating and covering locally generated publications such as papers and research reports. They are also necessary to avoid duplication of research.
- d. Directories; these include directories of medical libraries, who specializes in what...etc.
- e. Equipment; This include the provision of adequate computer technology to cope with the advances in information technology. It is also necessary to provide photocopying equipment to facilitate interlibrary loan services.

6.5 Structure of the Network

In order that all members within the proposed network system can communicate to one another and to the host (Headquarters), it is believed that the distributed (mesh) network structure is the most suitable structure. This structure will also make it easy to avoid the delay in providing services to end users, as the case, for example, in the star configuration. Figure 6.1 shows the proposed

network structure for university medical libraries. The network will have its headquarters at the University of Khartoum Medical Library which is the largest and most well-established of all medical libraries in the country, and that it has already been acting as the National Focal Point for the Healthnet Information Service, with the Satelelife groundstation. In the long run, the network should communicate to academic libraries in neighbouring countries within the region and to have an online access to their resources through the Online Public Access Catalogue (OPAC).

6.5.1 Organizational Structure

Figure 6.2 shows a proposed organization chart of the university medical libraries network. It is important in the initial phase to form a coordinating body composed of the chief librarians of the participating universities. The coordinating body shall be called "The Board of Directors" whose responsibility will be the establishment of a dynamic network system policy, the promotion and coordination of the network

Figure 6.1
PROPOSED NETWORK FOR MEDICAL LIBRARIES

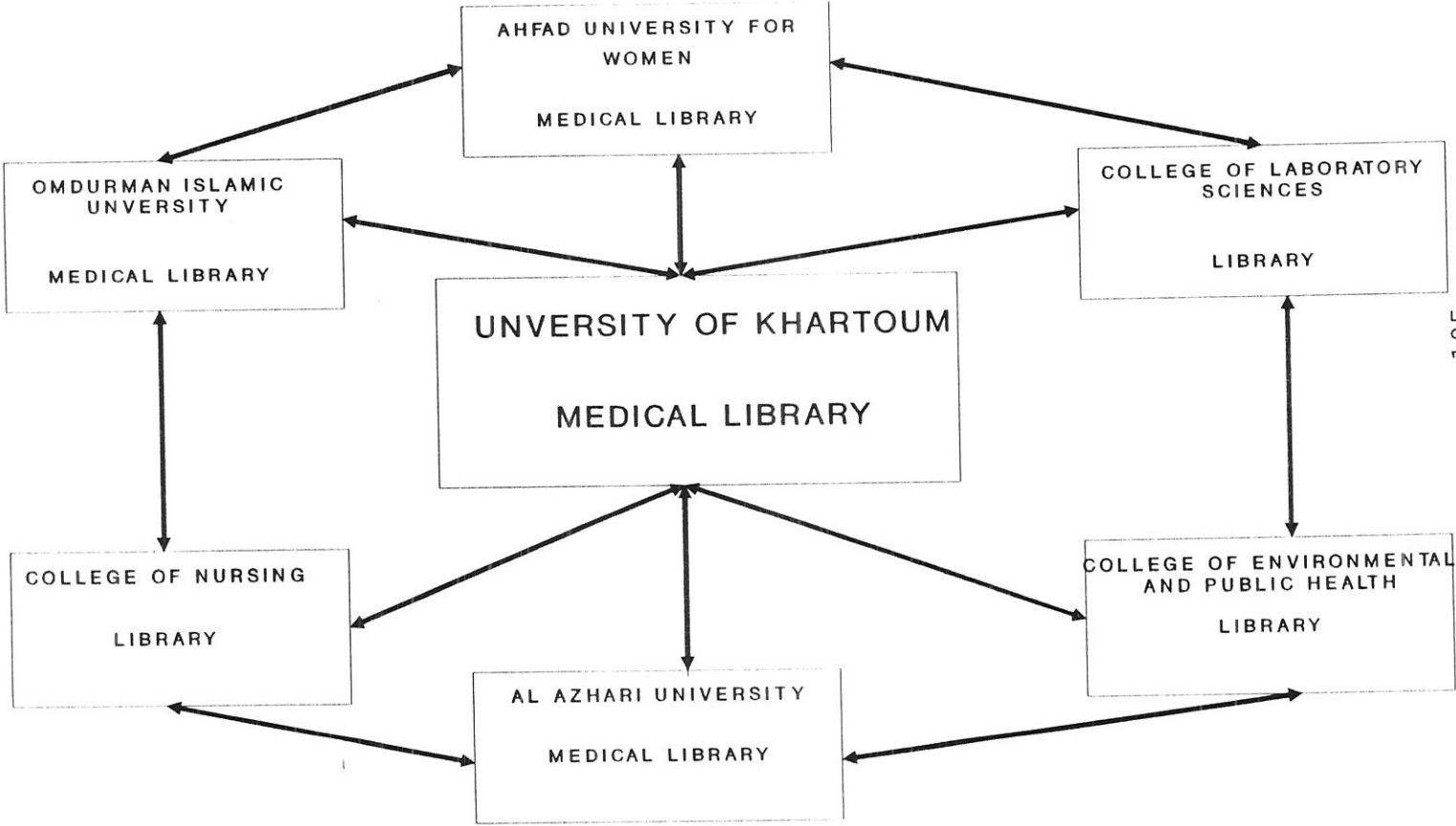
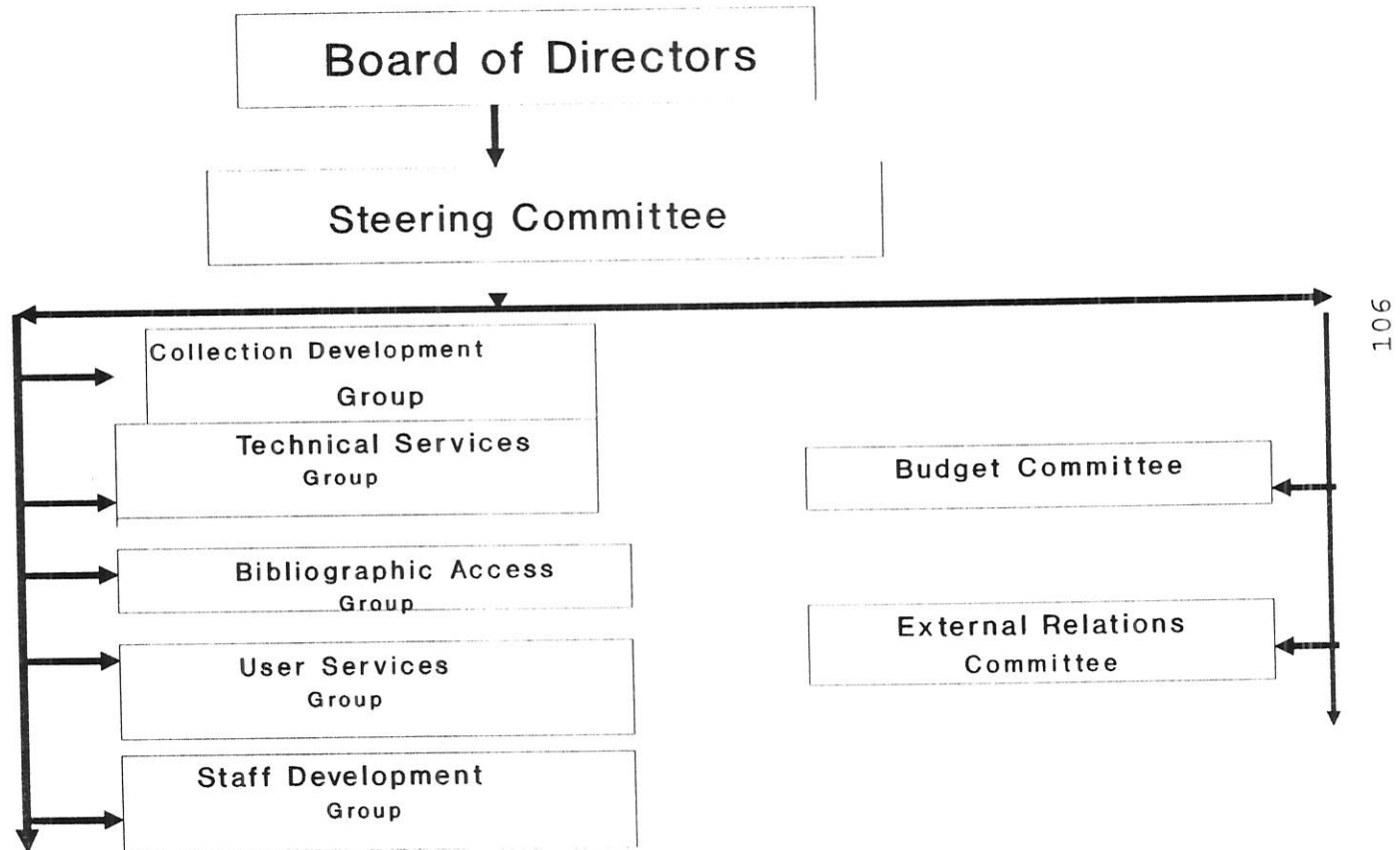


Figure 6.2
ORGANIZATION CHART
PROPOSED UNIVERSITY MEDICAL LIBRARIES NETWORK



functional development, and the formation of a steering committee for the network.

The steering committee shall be composed of the heads of the participating medical libraries.

6.5.1.1 Responsibilities of the Steering Committee

The steering committee, which will be composed of the medical librarians of the participating universities, shall have the following responsibilities and duties:

- The implementation of specific network programmes under the overall policy of the Board of Directors.
- Formation of ad hoc working groups.
- Preparation of an annual budget for the network.
- Assigning of responsibilities to participating libraries.
- Formulation of criteria for the evaluation of the network performance and activities.
- To contact external bodies on behalf of the network members on matters relating to the network activities.
- Organization of sensitization and education programmes for decision makers and end users.
- Coordination and follow up of the preparation of resource sharing tools such as national subject bibliographies on medical literature and union catalogue of holdings of medical libraries, and the follow up of their continuous updating.
- Preparation of a mechanism to collect data, eg statistical and financial data, on the network programmes and activities.

A number of network working groups shall be established within the steering committee. These will be ad hoc committees responsible for the planning and implementation of collective, cooperative actions in specific functional areas.

Working groups shall be in each of the following areas:

- Collection development ad hoc working group : Responsible for the coordination and follow up of the selection and acquisition of library materials for the network. This group is also responsible for the conservation and preservation policy of the network.
- Technical services ad hoc working group : Responsible for the coordination and follow up of the standardization of technical process, including cataloguing and classification. Advice on implementing particular standardization tools and procedures is also the duty of this group.
- Bibliographic access ad hoc working group : Responsible for the coordination and follow up of the preparation of the national subject bibliography on medical literature. It is also responsible for the supervision of the compilation of the union list of holdings of the network member libraries.
- User services ad hoc working group : Responsible for the coordination and supervision of the provision of reference and referral services to users of member libraries. This group is also responsible for the coordination and implementation of user sensitization and education programmes.
- Staff development ad hoc working group : Responsible for the

coordination, implementation, and supervision of staff training and development programmes. at different levels.

Two executive groups shall be formed within and under the supervision of the steering committee, namely the budget committee

and the external relations committee. Responsibilities of the budget committee include reviewing of budget proposals submitted by

the network members before they are submitted to the Board of Directors.

The external relations committee will be responsible for the communication and coordination of cooperative activities with other medical libraries at the national, regional and international levels.

6.6 Financial Support

Ruth Patrick (1972) advises that for a library cooperative and resource sharing network, it is important to estimate the budget required for the development and operation of the network quite carefully, especially if the operation is to depend on grants and fees. She further suggests that there are two applicable types of budget:

- a. An expenditure for all activities in terms of salaries, rent, ...etc
- b. A programme budget which includes what the expenditure

will be for particular activities.

There are two types of funding, internal and external. To keep the cost of coordination at the minimum level, expenses must be covered by all participating libraries, whereas expenses relating to individual libraries should be covered by those library.

The findings of the survey of medical libraries showed that there were two libraries that were willing to participate in the financial support of the proposed network. On the other hand, the two other libraries suggested that they would approach regional and international organizations and donor agencies for financial support.

It is suggested that the cooperative programme starts with internal funding provided by the parent institutions of participating libraries. The network coordinating body may approach regional and international organisations interested in the library and information networks and other donor agencies in order to secure the necessary financial support for the network.

CHAPTER 7

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

7.1 Summary

The main purpose of this study is to propose a cooperative system for medical libraries in Sudan. This is done in an attempt to provide medical information users with adequate, relevant, and up-to-date information and information services. In order to achieve this purpose, the study has investigated and reviewed the current state of medical information services in the country, including a survey of medical information users.

The study has fulfilled the following objectives which are stated in the purpose of the study.

1. Identification of the existing medical information infrastructure and the surveying of the available techniques of processing and disseminating information to end users;
2. Identification of the different categories of medical information users and identification of their information needs and information seeking behaviour;
3. Identification of the users' evaluation of the information and services they get within their respective institutions;
4. Identification of the existing pattern of cooperation among medical libraries surveyed;
5. The survey of the opinion of medical information professionals as to the idea of resource sharing and networking among medical libraries in the Sudan;

6. The study of existing cooperative models and the selection of the most appropriate one for medical libraries in Sudan.

For the purpose of achieving the above mentioned objectives, the descriptive survey method was used. Data were collected by implementing structured questionnaires, informal interviews, and observation. Two types of questionnaires were used; A questionnaire for medical information users who included undergraduate students, postgraduate students, and researchers. The second questionnaire was distributed to the surveyed medical libraries. The questionnaire for users was designed so as to collect information about the users information needs and information seeking behaviour, in addition to their evaluation of the information and services they have access to in their respective libraries. The questionnaire for medical libraries, on the other hand, consisted of three parts. Part one was designed to collect information about the library, part two was meant to collect information about the existing cooperative activities if any; and part three surveyed the opinion of medical librarian about resource sharing and networking of medical libraries in the country. This questionnaire was distributed to four medical libraries within the capital city of Khartoum.

The study has shown that the majority of the medical information users used books as their preferred source of

information, followed by current journals. The study showed that users also referred to other sources of information including handbooks, abstracting and indexing journals, and CD-ROM databases.

As for the information services preferred by users, the study revealed that The majority of users preferred reference and referral services as well as literature search. a considerable number of users also preferred translation services, research in progress, abstracting services, Selective Dissemination of Information (SDI), and current title services.

The majority of users revealed that the information they get in their respective libraries was fairly adequate, reliable, but untimely. They also indicated that they frequented other libraries to satisfy their information needs. These libraries include the University of khartoum Medical Library and the British Council Library.

The survey of medical libraries showed that all libraries surveyed suffered from lack of qualified personnel, shortage of technology equipment, especially microcomputers and microform readers, and that there is only one library that acquired CD-ROM data bases, namely the University of Khartoum Medical Library.

The study investigated the existing cooperative activities practised by the surveyed libraries. To this end it has been realised that libraries engaged only in the exchange of

publications, gifts, and photocopying services, mostly by informal agreements.

The study also highlighted the problems that hamper cooperative activities among the surveyed libraries. These problems were, according to the respondents, insufficient funds, inadequate number of qualified library personnel, lack of proper equipment, and lack of bibliographic control.

The study also surveyed the opinion of medical librarians as to the idea of resource sharing networking among medical libraries in Sudan; All respondents expressed their willingness to participate in a university medical libraries network.

Based on the results of the survey and literature review, a model for cooperation among medical libraries is suggested. In this model different forms of cooperation shall be established. Outputs of each cooperative activity were drawn mainly from the responses to questionnaires and arranged in preference order. These cooperative activities include the following:

- Cooperative Acquisition;
- Cooperative cataloguing\Processing;
- Interlibrary Lending;
- Storage\Preservation; and
- Education\Research.

In order to formalize and maintain these cooperative activities, a plan for medical libraries network is suggested. This plan includes proposals about the technical and

organizational structure of the network, the responsibilities of the different administrative and technical bodies of the network, and some suggestions about the funding of the network.

7.2 Conclusion

the medical information users survey revealed that there is a need for the acquisition of more information sources , especially textbooks . It also revealed that most of the available journals are out of date and that there is a need to subscribe to more current journals. There is also a need to introduce information technology equipment and products especially CD-ROM technology and databases which could be helpful in avoiding the high subscription fees to current medical and scientific journals.

The study has also drawn the attention towards the need to introduce user education programmes. Such programmes may take the form of compulsory courses for first and second year students.

The medical libraries survey revealed that there is a problem of qualified library staff. This necessitates the introduction of staff training and development programmes and the need to revise the grading and structural organization of the professional staff in university libraries.

It was found that all of the respondents to the libraries questionnaire were in favour of a library resource sharing and networking system. Most respondents agreed that cooperative

acquisition of journals and books, cooperative cataloguing, interlibrary lending, cooperative storage and preservation, and cooperative education and research should be the primary focus of the network.

In light of the survey findings and literature review, a model for cooperation and resource sharing among university medical libraries in Sudan has been proposed. The model of cooperation has long term goals, objectives and functions which will help in the designing of a library network system in the future. Therefore, in order to formalize and maintain the cooperative activities of the proposed model, a plan for medical libraries network has been suggested.

7.3 Recommendations

The following recommendations will definitely improve the existing medical information services as well as the development of the proposed university medical libraries network:

1. Commitment by university officials and library professionals to the realisation of the network goals and objectives.
2. Efficient bibliographic control on medical literature and the strict imposition and implementation of the legal deposit law.
3. Compilation and dissemination of the National Bibliography

on medical literature as well as the Union Catalogue of holdings of medical libraries.

4. The provision of adequate communication channels among the network members.

5. Provision of adequate information technology to facilitate the processing and dissemination of medical and health information to end users.

6. Standardization of technical processes and procedures to facilitate effective coordination and cooperation among the participating libraries as well as potential members of the network.

7. The design and implementation of appropriate user sensitization and education programmes.

8. Priority should be given to personnel training and career development at all levels. These could take the form of workshops and seminars, in-service training courses, and/or formal degree courses.

9. Improvement of the grading system and employment conditions of the university library professionals, especially those with higher qualifications, to be parallel with the grading and salary scale of the faculty academic staff.

10. Training institutions inside the country should coordinate

and tailor their curriculum to manpower needs and requirements.

11. The Steering Committee of the proposed network, through its external relations ad hoc committee, may approach and keep in touch with regional and international organizations interested in the information sector. By doing so the network will be able to keep abreast with new trends and developments in the field.

12. Studies should be carried out to evaluate the adequacies and/or deficiencies of current library resources and information services in various other subject fields. Such studies can pave the way for the establishment of a national information system of which the medical libraries network will act as an integral sectoral subsystem.

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Annex 1 : Questionnaire used to survey medical libraries
facilities and services in Sudan.

Date: /7/1995

Dear Medical Librarian,

I am writing a thesis on the topic " A cooperative system for medical libraries in Sudan : A model ". This study is carried out as a part of the requirement for the degree of Masters of Science in Information Science at the School of Information Studies for Africa (SISA), Addis Ababa University.

I would appreciate very much your filling out the enclosed questionnaire as it would provide significant data for my study. The questionnaire is designed to assess the current situation of medical libraries in Sudan, their cooperative activities, and the attitudes of librarians towards networking. All information and comments you may provide will be confidential; your replies will be used only for the purpose of this study.

please return the questionnaire to me before Sept, 1st 1995.
Thanking you in advance for your cooperation.

Sincerely,

Omer Hassan Abdel-Rahman
School of Information Studies for Africa (SISA)
Addis Ababa University
P. O. Box 1176
Addis Ababa
Ethiopia.

QUESTIONNAIRE

PART 1 INFORMATION ON THE LIBRARY

1. Name of library -----

2. Name of parent organization -----

-----.

3. Please state the number of
a. staff who hold the following degree

<u>Degree</u>	<u>No. of staff</u>
B.A\B.Sc	-----
Postgraduate Diploma	-----
M.A\MSc	-----
b. Paraprofessionals (with Undergraduate Diploma)	-----
c. Clerks	-----

4. Which of the following organizational units does your library have ? (please tick where appropriate).

- a. Acquisitions department ()
- b. Technical Services dept. ()
- c. Circulation dept. ()
- d. Serials dept. ()
- e. Reference dept. ()
- f. Administrative dept. ()
- g. Other(s) (please specify) -----

-----.

5. How many items of the following did your library purchase in the last fiscal year ?

- a. books -----
- b. journals -----
- c. nonprint materials (including CD ROM databases) ----

6. What is the total number of your library holdings of the following materials ?

- a. books -----
- b. journals -----
- c. nonprint materials -----

7. What cataloguing rules does your library use ?

- a. AACR () b. AACR2 ()
- c. Other (Please specify) -----

8. What subject heading list does your library use ? -----

9. What classification scheme does your library use ? -----

10. Does your library holds a union catalogue for all its materials?

Yes () No ()

11. Please indicate ticking in the appropriate box which of the following services does your library provide for its users ?

- a. Literature searches ()
- b. Compiling bibliographies ()
- c. Abstracts services ()
- d. Document delivery ()
- e. Other service(s) (Please specify) -----

12. Which of the following machines and equipments are

available in your library (please tick in the appropriate box if available)

- a. Photocopying machines ()
- b. Printing equipment ()
- c. Microform reader ()
- e. Microfiche\film reader ()
- f. Microcomputer ()
- if yes, how many ----
- g. Telex machine ()
- h. Facsimile ()
- i. Other(s) (Please specify) -----

PART TWO : INFORMATION ON COOPERATIVE ACTIVITIES

13. Is your library a member of any local or regional network?
if yes which one? -----

-----.

14. Please specify which of the following cooperative activities your library takes part in with other libraries. (Please tick where appropriate).

- a. cooperative cataloguing ()
- b. Cooperative acquisition ()
- c. Interlibrary loan ()
- d. Exchange of publications ()
- e. Gifts ()
- f. Photocopying ()
- g. Other (Please specify) -----

-----.

15. Are the activities, if any, maintained by formal agreements or informal agreements? -----

16. Please rank the following problems that affecting or would affect the cooperative activities according to their importance (that is 1 very important - 2 important - 3 less important - 4 least important)

- Insufficient funds ()
- Inadequate communication system ()
- Lack of proper equipment ()
- Inadequate number of professionals ()
- Lack of library associations ()
- Lack of bibliographic control ()

PART THREE : NETWORK OPINION SURVEY

1. Is it desirable to have a library network ? Please rank by circling the network activities according to their importance in your opinion. (i.e (1) highly desirable - (2) desirable - (3) not desirable - (4) no opinion).

A. ACQUISITIONS

- 1. Cooperative acquisition of monographic (book) materials 1 2 3 4
- 2. Cooperative acquisition of journals 1 2 3 4
- 3. Cooperative acquisition of non-print materials 1 2 3 4
- 4. Union exchange lists 1 2 3 4

B. CATALOGUING\ PROCESSING

- 1. Use of International Standard Bibliographic Description for network cataloguing 1 2 3 4
- 2. Centralized Cataloguing Unit 1 2 3 4
- 3. Union Accession List 1 2 3 4
- 4. Union List of Serials 1 2 3 4
- 5. Union Catalogue of non-print materials 1 2 3 4
- 6. Catalogue card production 1 2 3 4

C. INTERLIBRARY LOAN

- 1. Reciprocal borrowing privileges 1 2 3 4
- 2. Interlibrary loan services for non-print materials 1 2 3 4
- 3. Photocopying services 1 2 3 4

D. REFERENCE

- 1. Reference services 1 2 3 4
- 2. referral services 1 2 3 4
- 3. Abstracting and indexing services 1 2 3 4
- 4. Subject bibliographic services 1 2 3 4

E. DELIVERY SERVICES

- 1. Delivery services, such as special truck
delivery system 1 2 3 4
- 2. Access to machine readable database for
reference and cataloguing purposes 1 2 3 4

F. STORAGE\PRESERVATION

- 1. Storage centre for monographic materials 1 2 3 4
- 2. Storage centre for journals 1 2 3 4

G. EDUCATION\RESEARCH

- 1. Personal training 1 2 3 4
- 2. Joint research project 1 2 3 4

2. What other activities do you think should be considered for
potential cooperative network activities ? -----

-----.

3. If you currently do not participate in a library network
would you like to have your library participate in a network of
medical libraries ?
----- Yes ----- No ----- Not sure

Annex 2. Questionnaire for the Survey of Medical Information Users' Needs and Information Seeking Behavior.

QUESTIONNAIRE

Dear Sir/Madam

I am conducting a survey of the medical information services in Sudan for the purpose of proposing a cooperative programme for medical libraries in the Sudan. This programme will contribute to providing medical students, professionals, and researchers with adequate, relevant, and up-to-date health and medical information. In order to determine the information needs of prospective users, I would like to get some information from you about your information requirements. I would appreciate it therefore if you could take a few moments of your valuable time to answer the following questions.

Thanking you in advance for your cooperation.

Sincerely,

Omer Hassan Abdel-Rahman
School of Information Studies For Africa (SISA)
Addis Ababa University
Addis Ababa
Ethiopia.

-
1. Name -----
 2. Age -----
 3. Address -----
-
-

4. Educational Qualifications

Degree/ Diploma	Year	institution	Subject
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----
-----	-----	-----	-----

5. Language Ability

Mother tongue -----
 Second language -----
 Other Language (s) -----

6. Experience

	Institution	Year
Medical Practitioner	-----	----
Teaching	-----	----
Research	-----	----
Managerial/Administrative	-----	----

7. Nature of activity in the organization (Please tick in corresponding parenthesis)

Studying : Practising ()
 undergraduate ()
 postgraduate ()
 Teaching () Research ()
 Consultancy ()
 Other (Please specify) -----

8. What is your current subject interest ? -----

9. What type of information do you need in you work ? ()
 (Please be as specific as possible in describing your information needs. Define any terms that may have special

meaning in your point of view. List the keywords that describe your information needs) -----

10. What sources of information do you refer to in order to get the information you need? (Please rank your preference by numbers, e.g. most preferred 1, second preferred 2 ..etc, within the parenthesis)

- Books ()
- Handbooks ()
- Current Journals ()
- Indexing Journals ()
- Abstracting Journals ()
- Other sources (Please name) -----
-

11. How do keep abreast with the latest information in your field of specialization ? Is it by :

- referring to the institute's Current Awareness Services
{ This type of service includes informing users of new items received recently by the library} ()
- Scanning latest periodicals in the library ()
- Discussions ()
- Attending conferences and seminars ()
- Corresponding with colleagues ()
- Other method(s) (Please specify) -----
-

12. What type of information services do you prefer ?(Please rank your preference by numbers as in question 10 above)

- a. Reference and referral { Referral service is the type of service whereby a user is redirected by the library staff to another library or information centre, where he\she can get the desired information.} ().
- b. Literature search ()
- c. Current Titles ()
- d. Selective Dissemination of Information (SDI) {Giving specific information to specific users about items received which are relevant to their field of specialization} ()
- e. Research in Progress ()
- f. Abstract Service ()
- g. Translation Service ()
- h. Other services (Please specify) -----

13. Do you find the information you have access to

- Adequate

- completely ()
- fairly ()
- not at all ()

- Timely

- Yes ()
- No ()

- Reliable

- Yes
- No ()

14. Do you usually get the information you need within your medical library or do you go to other libraries in order to satisfy your information needs.? -----

15. If you go to other libraries for your information needs, please name those libraries.-----

16. Is there any thing else you would like to say about your information needs or about the services you now get in your University library ?

DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

A handwritten signature in black ink, consisting of a large, stylized 'O' followed by a series of loops and a long horizontal stroke extending to the right. The signature is positioned above a solid horizontal line.

Omer Hassan AbdelRahman

This thesis has been submitted for examination with my approval as a university advisor.

Dr. G. A. Alabi