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INFORMATION RESOURCE SHARING MODELS IN DEVELOPING COUNTRIES: A NETWORK EMERGING FROM THE WORLD BANK SUPPORTED ENVIRONMENTAL MANAGEMENT CAPACITY BUILDING PROJECT*

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Abstract: Managing environmental knowledge, disseminating it and building capacity for its efficient use is as important as creating knowledge. The paper aims at examining the use of information resource sharing networking in the area of environmental studies in developing countries. The paper has been divided into five sections. First section discusses the concept and rationale of information and resource sharing in the modern society. Second section identifies linkages between the information and communication technology, information resource sharing and the networking models. Third section explores the differences in the developing and developed countries in information resource sharing and networking. Fourth section deals with the networking in environmental studies in India, a developing country. Fifth section examines the building up of Information Sharing System which is vertically and horizontally integrated across institutions working in the area of Environmental Economics under the World Bank Capacity Building Project. It is our contention that this is an important component in the area of Environmental Economics. Sixth section presents the concluding observations.

Introduction

Knowledge is critical for development. Poor countries differ from rich ones not only because they have less capital but also because they have less knowledge. Economic growth in the rich-industrial society has occurred largely by extensive replication of industrial activity, based on intensive use of fossil fuels and generally of the earth's resources. These industrial activities have reached at levels from where it threatens the atmosphere of the planet, its bodies of water and bio-diversity. If the developing countries follow the same path of economic growth, it will prove to be disastrous for the planet and its environment. They need a sustainable development strategy, which not only protects the environment but also improves it while promoting economic growth. Better environmental outcome requires more knowledge about environmental impacts, newer technologies and

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environmental performance. Managing environmental knowledge, disseminating it for its efficient use is as important as creating such knowledge.

Are the developing countries managing and disseminating environmental knowledge for its efficient use by designing and building information resource sharing networking in the area of environmental studies? Is the information resource sharing networking in developed countries different from that of the developing countries? Are these information resources sharing networking effective in achieving their objectives? These are some of the questions, which need to be investigated. The paper aims at examining these issues.

Information and Resource Sharing in Modern Society

The voluminous growth of published documents in the recent past, increasing cost of information sources, technological advancements that offer newer methods of information processing, retrieval and dissemination are some of the factors which have made resource sharing a necessity. The Library co-operation is a very old concept and a form of resource sharing. There are large instances of such co-operation among libraries in the library literature (Kaul, 1999).

Need of resource sharing was realised by libraries a long back. Besides entering into inter-library loan practice, libraries also thought seriously of resource sharing in many other areas, such as co-operative acquisition, co-operative cataloguing, co-operative classification, etc. Inter-library loan has been practised as one of the most popular resource sharing activity amongst libraries. Inter-library loan in a traditional library is severely affected by barriers of information communication, such as apathy of the lending library, distance, language, time etc. A computerised inter-library loan system overcomes these limitations.

For resource sharing, the participating libraries need to come together and co-operate in two broad areas: (a) Developing the collection on shared basis, and (b) Developing services for exploiting such collection (Dhawan,1999). Developing the shared resources is of great importance and central to the concept of resource sharing. In developing the shared resources, the focus is first on eliminating duplication in the acquisition of various participating libraries to the extent possible. Thereafter, the focus is on the selection of such publications, which the participating libraries agree to share, and later on their acquisitions. The efforts of participating libraries in developing the shared resources are, therefore, directed in two distinct directions: (a) Rationalisation, and (b) Acquisition. There are several limitations to the resource sharing in the print environment as it existed till recently: a) open access to shared resource not feasible; b) service depends upon library performance; c) access to shared resource at a cost.

User services are critical to the resource-sharing programme for its performance and effectiveness in providing access to shared resources. The libraries as are required to organise and provide the user services are not always fully equipped to meet such obligations. However, modern information technology has made the task of resource sharing very simple and convenient. The new technology brings forward to the information field many products and services which have changed the nature of fundamental library objectives and operations. There are two technologies that have contributed to these revolutionary changes. These are Computer technology and Telecommunication technology.

Information and Communication Technology, Resource Sharing and the Networking Models

Over the last two decades the libraries have witnessed impact of information technology that has been effecting the structure of the services to a great extent. Moreover, the problems of space, standardization, professional development of the staff, challenges posed by new technologies, drastic cuts in the library budgets have aggravated problem of the present day librarianship. However, the solution to the problems of information explosion, ever changing needs of users, increasing amount required for subscription to same number of periodicals, shrinking library budget, and devaluation of rupee and its impact on the library acquisitions can best overcome upon certain level by the following means: a) Use of computer and communication networks for resource sharing; b) Use of national and international databases through communications networks; and c) Introduction to full text CD-based systems.

Various Resource Sharing networks have been observed at local, regional, national and international levels. Normally, three levels of national resource sharing networks exist: a) Local: Information is stored in the local libraries in the form of Union Catalogue for local collection available in local libraries. b) Regional: Information is stored in regional libraries and services are provided on broad subject area basis. c) National: National Union catalogue is prepared on national basis and services are provided to users based on national resources. Given the wide scope for exploiting resources and facilities available in the participating libraries, it is possible to work out a number of models for developing resource-sharing programs. There are four existing models, which have been presented in table 1.

Centralized Collection Development and Services at National, or Regional Level

This model aims at providing the cooperation between libraries, which are geographically scattered within a region or the country. The resources, which the

model intends to share, are acquired centrally and stored at a single site. For running the proposed facility, the participating libraries contribute towards the capital funds and the recurring funds. Grants are also sought from the government and private agencies for raising capital fund. The facility provides for an organizational structure for its control and governance. The structure also includes an apex body. Creating a new facility is central to the concept of this model. National Lending Library, UK illustrates the example of such a model.

However, in true sense of the term latter is not the right example. National Lending Library, UK, is not based on the concept of library cooperation. It is a facility maintained and controlled exclusively by the National Library, UK. The subscribing member libraries are not its partners but its end users. They have no role to play in building its collections. Their role is limited to that of a consumer.

Centralized Collection Development and Services by Subject

This model aims at developing the specific subject collection of documentary resources on shared basis. City, region, or the country may limit the geographic distribution of libraries cooperating in such a venture. The subject collection is acquired centrally and stored at a single site. Membership fee and grants from the government and private agencies (Dhawan, 1999)

Constitute the main source of funds to support and sustain such a facility. Examples of such a model result in consortia. National Science Library at INSDOC, New Delhi (India) which once had the mandate to develop a complementary collection of journals in science and technology, is also cited as an example illustrating this model. However, this example is misplaced since this is not a venture used to provide funds for purpose. The user libraries are its consumers and not partners.

Table 1: Various Model to Resource Sharing

Model	Aims and Funding	Examples
1. Centralized Collection Development and Services at National, or Regional Level	Resources: acquired centrally and stored at a Single site. Funding: Contribution by Participating libraries. Grants are also sought from government and private agencies.	National Lending Library, UK
2. Centralized Collection Development and Services By Subject	Resources: Subjects specific collection of documentary resources. Acquired centrally and stored at a single site City, region, or country may limit the geographic distribution of libraries. Funding: Marketing of services and grants from the government and private agencies.	National Science Library at INSDOC, New Delhi
3. Centralized Collection Development at Organizational Level	Resources: Libraries belonging to a single bigger organization collaborate. The shared collection is acquired centrally at a single site. Funding: Organization backing the Library provides funds. The participating libraries may also contribute towards the central funds	CSIR,DRDO, DOE, ISRO
4. Coordinated Collection Development at Institutional Level	Resources: Eliminates duplications. Serves at the level of participating libraries. The geographical area of cooperation could confine to a city, region, or country. Funding: The individual libraries determine their level of support. The higher their budget the higher their support. User libraries pay for the services they avail of.	DELNET, BONET and MALIBNET

Centralized Collection Development at Organizational Level

This model aims at developing a shared collection of documentary resources by limiting the scope of cooperation to libraries belonging to a single bigger organization such as the Defence Research Documentation Orgaization(DRDO), Department of Electronics(DoE), Indian Space Research Organization (ISRO) and Centre for Scientific and Industrial Research (CSIR).

The shared collection is acquired centrally at a single site. The participating libraries contribute towards the central funds for building the shared collections as well as for providing services

Coordinated Collection Development at Institutional Level

In this model a group of participating libraries take the initiative to co-ordinate their acquisitions. Their objective is to eliminate duplication in acquisitions to the

extent it is possible. Further, the member libraries undertake to give services such as information access and document delivery. This model leads to the concept of decentralized development of collection at the level of participating libraries and also to decentralized system of giving services. The individual libraries, participating in the programme, determine their level of support to the programme for building the shared resources. The higher their budget, the higher is their support. User libraries are required to pay for the services they avail of. The geographical area of co-operation could confine to a city, region, or country. This model is in operation in most of the resource sharing programmes started by various library networks such as Delhi Library Network(DELNET), Bombay Library Networking(BONET),Madras Library Network(MALIBNET) and Information Library Networking(INFLIBNET) (Dhawan,1999).

Resource Sharing in Developed and the Developing Countries

Library networks have grown mostly during the last thirty years in different geographical environment in order to cater to the specific needs of the users. In the United States there has been a proliferation of them. Library networks in other countries are also growing. Several models have emerged that provided specific services. Not all networks conform to the essential functions of library networks. However, the essential functions should include the promotion of Resource Sharing, creation of resource sharing tools like Union Catalogues, rationalisation of acquisition and maintenance of International standards for creation of records uniformly. Libraries should be able to join different types of networks depending upon the need and select a model, which conforms to its requirements. (Kaul, 1999)

In the developed countries resource-sharing networking was started long back. For instance the growth of networks in the United States can be traced from the mid of 1960. USA is the birthplace of library networking and by now libraries in each state is networked to local, regional and national network. It is important to note that the US Department of Education has been advocating a vigorous policy of promoting library networking. It offers networking grants, supports inter-library loan projects, automation and retro-conversion projects, resource sharing schemes, etc. besides providing regular federal grants annually to the public and academic libraries. Resource Sharing works in UK is also well established. The best example is Birmingham Library Co-operative Maintenance Project(BLCMP) in Birmingham, has 13 million bibliographic records of books, serials, music etc. in its database and its catalogues get a hit rate of above 90 per cent with more than 60 libraries comprising public libraries, college libraries, university libraries, national and special libraries. BLCMP has introduced EDI clearing house service in about

25 libraries. In Australia the resource sharing tools have grown from catalogue cards to national databases with the contributions of many older and larger libraries. In Australian Bibliographical Network, the national and central bibliographic databases are maintained and co-ordinated and maintained by a national agency. The Swedish Model for resource sharing is called the Consortium Model. This model is developed only for six major science and technology libraries in Sweden.

The developing countries like India are lagging behind in library co-operation. The reasons for the same are poor funding and the non-existence of the spirit of give and take or exchange is delaying the prospects of resource sharing programmes. The practice of resource sharing in the Republic of China (Taiwan) has been as limited in scale as has been in India. Greater efforts have been made in China for the development of documentary information resources because it was considered that these resources would work as China's knowledge reserve to promote the development of economy, science, technology and culture. The main effort was made on the rational distribution of the resources with the adoption of new technology. In some countries, resource sharing has become an important library programme such as in Thailand. In the 1970's work on the creation of bibliographic tools such as union catalogues and union lists of serials had begun but in the 1990s networking was considered to be the main tools for resource sharing. Best examples are MOSTE (Ministry of Science Technology and Environment) library network and CHULALINET (Kaul, 1999).

The growth of library Networks in India can be traced to the initiatives made by NISSAT in establishing CALIBNET in 1986, DELNET in 1988 and other networks subsequently. University Grants Commission (UGC) established INFLIBNET in 1988. DELNET has emerged as the first operational library network in India with the support of the National Informatics Centre. No efforts have been made to network public libraries since it is becoming essential to provide networked information to the public. The progress of INFLIBNET has not been at the level as it was planned. There has not been much progress made by BONET and CALIBNET as library networks. They have prepared no union catalogues. MALIBNET has also not prepared union catalogue, which is a must for resource sharing. DELNET, on the other hand, has made considerable progress. More than one hundred and sixty six libraries have joined DELNET as an institutional members. The database have increased from one in 1995 to 12 in 1997 with an average increase of about 160 percent in the size of data from 1996 to 1997 and 138 per cent from 1995 to 1996 (Kaul, 1999).

Environmental Information Systems in India

The UN Conference on Environment in 1972, at Stockholm, warned the world about the forthcoming danger in the area of environment and also established the fact that environment and development are two sides of the same coin. The environment has become a global issue. Different disciplines of knowledge are now studying environment and its related issues.

India, a large and old civilisation, has inherited a vast area with a variety of flora and fauna. It is one of the largest reservoirs of bio-diversity, along with other natural resources. To preserve and sustain such precious resources, scholars and missionaries are trying to understand the environment and its related issues. The information generated all over the world is very important for these scholars. There is a need to develop a network using the latest technologies and share the wealth of information.

Various steps have been taken in this direction by the Government of India and by other institutions with the help of World Bank under its Environmental Management and Capacity Building Programme. At the Government level, the Ministry of Environment and Forests of Government of India established Environmental Information Systems (ENVIS) centres across the subcontinent act as communication bridges to reach out to the masses. The basic premise was to empower people through the powerful tool of information by evolving decentralised information paradigms and make them sensitive towards environment (Harjeet Singh, 1999).

ENVIS is a decentralised network consisting of a focal point in the Ministry co-ordinating the activities of a chain of 25 subject-specific nodes located in various prestigious Institutions/Organisations all over the country. (Harjeet Singh, 1999).

The objectives of ENVIS are classified into two broad categories- long-term and short-term objectives. The long-term objectives of ENVIS are as follows: 1) To build up a repository and dissemination centre in Environmental Science and Engineering; 2) To gear up the modern technologies of acquisition, processing, storage, retrieval and dissemination of environmental information; 3) To support and promote research, development and innovation in environment information technology.

The short-term objectives are as follows: 1) To provide national environmental information service relevant to present needs and capable of development to meet the future needs of the users, originators, processors and disseminators of information; 2) To build up storage, retrieval and dissemination capabilities with the ultimate objectives of disseminating information speedily to the users; 3) To

promote national and international co-operation and liaison for exchange of environment related information; 4) To promote exchange of information amongst the developing countries.

The responsibilities of the ENVIS Centres are as follows: a) Building up a good collection of books, reports and journals in the particular subject area of environment. b) Establishment of linkages with all information sources in the field of environment. c) Responding to users' queries. d) Establishment of a data bank on some selected parameters relating to the subject area. e) Co-ordination with the focal point for supplying relevant, adequate and timely information to the users. f) Helping the focal point in gradually building up an inventory of information material available at the Centres. g) Identification and filling up of the gaps in the specified subject area. H) Bringing out newsletter/publications in their subject area for wide dissemination.

Based on the functions of the ENVIS, it has been designated as a National Focal Point (NFP) and a Regional Service Centre (RSC) of INFOTERRA of UNEP for the South Asia sub-region, a global environmental information network which stimulate and support exchange of information within and between the nations. Almost all member countries of United Nations are partners of this network.

ENVIS maintains a close liaison with various national information systems like National Information System of Science and Technology (NISSAT), Biotechnology Information System (BTIS) and several other similar networks for exchange of environmental information as well as to avoid duplication of efforts in the concerned fields. ENVIS also makes use of a large number of computerised databases developed by scientific institutions all over the country. In order to search the various databases both nationally and internationally, ENVIS has created a Web site, which could be browsed at http://www.nic.in/ envfor/envis.

ENVIS Focal Point in the Ministry has been identified as an implementing agency for UNDP's Sustainable Development Networking Programme (SDNP). The SDNP has been initiated with financial support from United Nations Development Programme (UNDP) and International Development Research Centre (IDRC), Canada for a period of three years (1998-2001). The goal of the programme is to promote the process of sustainable development through organised accessibility to and exchange of information among all concerned parties, viz. academic and research institutions, NGOs, government bodies and business establishments. The ENVIS Focal Point in the Ministry networks with twenty-five ENVIS Centres located in various parts of the country. These Centres have been collecting, analysing and disseminating information on their specialised subject areas related to environment.

It is important to note that both ENVIS and SDNP have to work together to avoid any duplication of efforts and set up a common goal which can be met by joint efforts of the ENVIS Focal Point in the Ministry and the SDNP Secretariat.

An Information Sharing System in Environmental Economic

In addition to the ENVIS networking, a model for resource sharing is being developed at Environmental Economic Unit of the Institute of Economic Growth (Kaul, Surekha1999). The Ministry of Environment and Forests, Government of India, with financial support from the World Bank, is implementing the India Environment Management Capacity Building Technical Assistance Project. One important component of the programme is environmental economics. Environmental economics as a discipline studies the impact of economic activities on the environment and the implications of using environmental resources in economic activity. Number of issues, like, Pollution, bio-diversity, climatic change, etc. are being examined in different context, space and time by the economists and other social scientists, located all over the world. During the last few years a lot of information and knowledge has been created in the area of environmental economics. In order to understand the complications involved in environmental issues, it becomes imperative to share and disseminate the knowledge among the interested individuals and organisations. Modern Information Technology is helpful for this purpose.

The Expert Committee on Environmental Economics (ECEE) under the Chairmanship of Dr. Raja J. Chelliah is responsible for an effective implementation, monitoring and supervision of this programme. Four core institutions namely (Madras School of Economics (MES), Chennai; Institute of Economic Growth (IEG), Delhi; Indra Gandhi Institute of Development Research (IGIDR), Mumbai and Indian Statistical Institute (ISI), Calcutta and thirteen other interested institutions have been identified for countrywide implementation of the project. MES is the co-ordinating agency for execution of the project.

The Environmental Economics Unit (EEU) is part of the IEG, which was founded on 11 November 1958, by Professor V.K.R.V Rao. Professor Rao, the first director of the Institute. The Unit was set up in 1998, initially to develop capacity building activity on Environmental Economics in India. The Unit undertakes research and training activities, approved by the Academic Committee of the Institute and fitting into the chapter of activities proposed under the World Bank Project Implementation Plan on Capacity Building in Environmental Economics. The areas of research broadly covered under this unit are:

* Valuation of natural resources, resource accounting and integration

* Fiscal and other instruments for environmental management
* Institutional approach to bio-diversity and common property resource management with reflection on gender and other equity issues.

Aims and objectives:

The main aim of the of Environment Economics Unit is to carry out the research work in Environment Economics and its allied areas.

* To carry out research work in areas of environmental economics and provide policy guideline (e.g. resource economics, pollution abatement policy at local and Global level, Exploitation of Natural Resources, Bio-diversity, thrust for Urbanisation);
* Dissemination of information (part of the World Bank project) through proper training to academics, practitioners, policy makers in government and non-governmental organisations;
* Dispatching of material or information through E-mail to interested persons in India and abroad;
* To introduce environment economics as a core course at university level; and
* To bring more awareness about environmental economics through the activities listed above.

To carry out these aims and objectives of the EEU, there is a need for proper interaction between different institutions/ organisations at national and local level. This interaction is possible only with the help of resource sharing and Networking. This electronic data interchange, messaging etc. (Networking) can be defined with the help of the model.

The Environmental Economic Unit is at present providing the following services:

a) CD-ROM Search Services: CD-ROM is one of the most important electronic resources available at IEG library keeping in view its importance and utility. It is also providing the CD-ROM literature search services through various CD-ROM databases. Down loading data bases and disseminating the same on various subject, like, Energy Economics, Natural Resource Economics, Air Pollution and Climate changes, etc.

b) Contents Page Services: The Unit has also introduced this service for environmental economics unit group as well as Indian Society for Ecological Economic (INSEE) with the objective of providing access to the contents of Journals received at IEG Library. Potential users of this service have already been identified. The contents of relevant journals are downloaded from the Internet too.

1. Internet service: The Unit is also providing the services of downloading the information through internet access and disseminating the same among all the institutes in India listed for conducting training and research in Environmental Economics by the Baseline Survey, conducted by MSE in 1998.
2. Abstracting and full text Service: The unit is also providing abstracting service as well as full text services on request basis.
3. During the faculty upgradation programme participants are provided with reference material.
4. Visitors are also provided with above-mentioned services.

Since IEG is one among the core institutes, it disseminates information to various institutions and individuals. Institutions include universities, research institutions and college libraries. On the other hand individuals include trainees, researchers and specialists. Information dissemination is a two way process. After collecting queries from different individuals, the main issues relating to Environment are identified and material related to that is disseminated to all interested individuals as well as the institutions working on different environmental issues.

Networking Model

A network can be local, regional, national or international. It is for the electronic transfer of information between two or more points irrespective of distance. The model that is used for networking as well as Resource Sharing in Environmental Economics is given in Figure1. The Network is being developed in stages.

At first stage, the model of Resource Sharing includes the following:

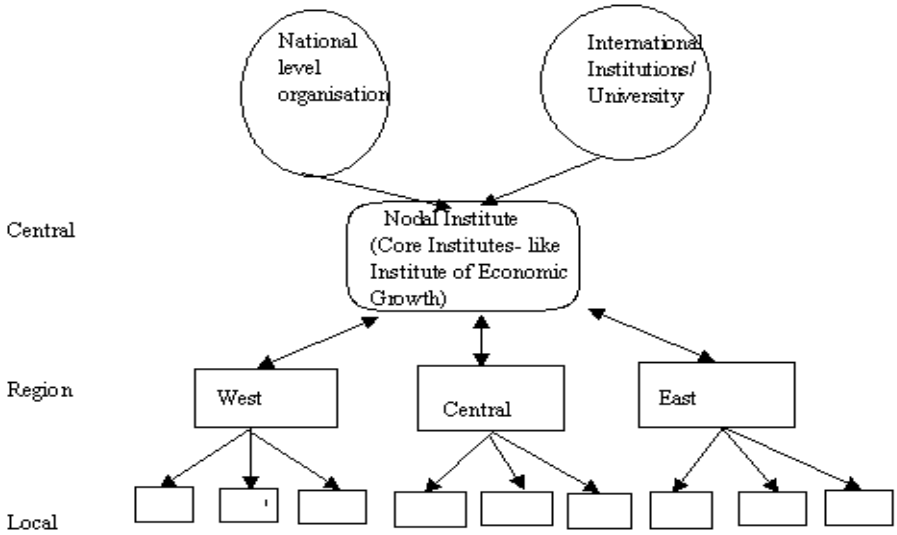
- Inter-linking between National & International Institute/University /Organisation in the field of Environmental studies.
- One of the national level institute is taking initiative(IEG) to act as a hub (a central node) for co-ordinating all networking activities.
- Central node is supposed to get information from the national level institutions as well as international institutes in the field of environmental studies.

At the second stage, the central node accumulates the information from all participating institutions of national and international level and to be disseminated to regional level institutions/universities etc. To make this process of information dissemination more effective and useful, the two-way communication should be encouraged.

At third stage, after the networking among international, national, regional institutions/ university, situated at regional level will disseminate information at

the local level Institutions/ University, which also includes Non-Govt. Organisation.

At present, this network is at the first stage of its operation. To make this network successful there is a need to develop physical and human resources. The nodal library shall take initiative for installing an integrated CD-ROM network system (e.g. Central Library of IIT Madras). Scanners shall also be made available. The human resource shall also be trained to use latest information technology.



All the participant institutes in the network would be motivated and encouraged to provide efficient services to the users. The model has the following features:

a) Information generated and created any where in the world is disseminated speedily at all levels.

b) There is no concept of membership fee. Participating institutes and organisations will arrange their own money form different sources.

c) Institutes/Universities are fully equipped with computers and other related equipment for giving document delivery services.

d) Each institute is independent.

e) To make this networking efficient, skilled and experienced human resource is being deployed. The attitude of such people is of critical importance.

f) Use of electronic form of publication for sharing resources

g) At a later stage, duplication of costly and highly used Journals may be avoided by some mutual agreement and the same can be shared through the network.

h) This network is decentralised form of acquisition and storage in building the shared resources. This would be technically valuable and economical also. This model focuses on specific subject; to begin with it is keeping the size of the resources to be shared as small as possible and within manageable limits. It will be economically viable also.

In the next phase, nodal library can also think about the digital libraries. Information may reside on different storage media such as electronics memory or magnetic and optical disk. In order to access digital information it is necessary to use either special purpose, multimedia reader stations or some form of computer system. The information can also be accessed remotely via telephone modems or by means of computer communication networks. This information can be shared at a very low cost. Therefore, while a conventional library might hold one or two copies of a book, a digital library could generate an unlimited number of copies at the touch of a button (Chopra, 1999).

Developing such a network requires a proper co-operation and understanding. The similarities and dissimilarities of the proposed model with other existing model are given in the table 2.

Concluding Observations

It can be concluded that in a developing country like India, steps are being taken to disseminate knowledge about environment. The capacity is being built up with the help of international funding agencies for this purpose. With the explosion of knowledge and constraints on the financial resources, the resource sharing networking has emerged as an important alternative. The information technology has facilitated the resource sharing among the institutions located in different geographical areas. It enables the participating libraries to obtain material from each others may be the list of books, indexes and abstracts of required articles, facsimile copies of required pages or documents, charts, figures, graphs, drawings by using computer terminals attached to a large or very large network system and data bases coupled with visual display units (VDUs) and attached with printing facility. Information can be scanned first on the screen, and if required, relevant information can be obtained in the print form.

Table 2: Similarities and Dissimilarities of Resource Sharing Models

Existing Model	**Proposed Model of Resource Sharing**	
	Similarities	Dissimilarities
1.Centralized Collection, Development and Service	1.1 Services are at National and Regional level 1.2 Participant institute can contribute towards funds	1.1 Every institution is independent. Governing body may comprise representative from International, National, Regional and local level Institution.
2.Centralized Collection, Development and Service by Subject	2.1 State level funding 2.2 Developing a shared collection of documentary resources on specific subjects	2.1 No geographical limitations 2.2 No membership fee to be imposed Every institute is independent but they should help in co-ordinate acquisitions
3.Centralized Collection, Development and Service at Organisation level	3.1 Participant institutions can contribute funds	3.1 Every unit is independent 3.2 No geographical limitations
4.Coordinated Collection, Development at Institutions level	4.1 Co-ordinate the acquisition to eliminate duplication 4.2 Decentralized system of services	4.1 No geographical limitation 4.2 Users library need not to pay

The network in the Ecological and Environmental Economic Studies established in India, though at the first stage of operation, will overcome the geographical barriers. Initial problem of funds to purchase computers and other related equipment has been solved with the help of the World Bank, and Government funding. Later on, to sustain such a system participating institutions will be dependent on their respective institutions for funds or they will have to generate resources. It is important that the attitude of the employee of the participating institutes should be very co-operative. In addition to learning about the technical aspect of information technology and its uses in the resource sharing, there is a need to make an effort for the attitudinal change among the Human Resources in the libraries. The training programme related to the development of Human Resource in the library and information centre should be devised keeping in view this aspect. One of the positive features of the network, for the Ecological and Environment Studies is that it can be developed in stages. As more and more

institutes are willing to be the part of the network, they can be included in this. This network will help in furthering the knowledge in the area of environment.

Resource Sharing networks in the developing countries face problems of financial resources. In developed countries there is no such problem. In developed countries, Government is taking active interest in promoting such networks. However, in developing countries, Government is not showing much interest. In India, there is a problem of financial resources. However, there is no dearth of skilled human resources to manage such networks.

The study has got certain implications for all the developing countries. Library networks can be established for co-operation and resource sharing among libraries of all types covering all subjects in a city, state, region, or a country. Specialised library networks among one type of libraries or among the libraries in one discipline may also be established. Necessary databases and bibliographic tools like union catalogues and union lists be created. Rationalisation of acquisitions should be done primarily in libraries specialising in one discipline. Network should be engaged with efficient ILL and document delivery services. Network should aim at developing online access among member-libraries to each other's specialised collections and services either through network or directly. All libraries should follow a standard MARC format, ACCR-II cataloguing code, a standard thesaurus like LCSH uniformly. E-mail and Internet facilities should be available with the libraries. Library network should offer shared cataloguing, co-operative collection development, reference service, training, etc. A network model should be selected keeping in mind the purpose for which the sharing is to be done by the participating libraries. The networks that offer services on all subjects and serve all types of users and libraries will progress, as they will attract a large number of users that will make them sustain their services (Kaul, 1999).

A number of networks are operating in India. However, no study is available to measure the effectiveness of the existing networks. There is a need to investigate the problem faced by these Networks. The result of the study will help in improving the other Networks. This is an area, which need systematic and continuous research.

Notes

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