INTRODUCTION

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“Man can live individually, but can survive only collectively. Hence, our challenge is to form a progressive community by balancing the interests of the individual and that of the society. To meet this we need to develop a value system where people accept modest sacrifices for the Common good.”

Narayana Moorthi


1.1 INTRODUCTION

The world we live in is witnessing an information explosion. Generation and dissemination of information has become easier and speedier due to technological advancement. Sitting anywhere in the world, information everywhere can be accessed. Despite the world being fragmented by umpteen barriers, it has become a single compact unit due to this revolution in information technology. With the advent of digitization, the world has literally become available at the finger tips of a user. The availability and accessibility of information resources have, thus, undergone drastic changes. These changes have influenced the various facets of academic activities, especially those in teaching, learning and research. In this context, libraries as centers of information have an important role to play in the promotion of education and research by facilitating the provision of the required, relevant and up-to-date information to the users.

The quality of life of the society in general and individual in particular depends greatly on the quality of education provided to the people. Education has, therefore, become one of the most crucial services in any country. India has a long history of higher education. The early Gurukul system of education flourished in the Vedic and Upanishad periods in India, and a huge university was set up at Takshashila in the sixth century BC which was situated at the place now called Taxila, in Pakistan. Two other universities, namely Nalanda and Vikramshila, were established in the fourth and fifth centuries AD, respectively (Dogra and Gulati, 2006). Higher education institutions in the country, especially the universities, have been facilitating the production of the required quality manpower as per demands made in the social system. Since India’s independence, the higher education system in the country has grown enormously as in any other developing nations in the world. The
advent of ICT products like computer and internet has further made it possible to spread higher education even in the remote corners of the country. Education is one of the most crucial services in the economy. (Cholin 2005)³.

Research is an intellectual activity of gathering information needed to solve a problem, which in turn contributes significantly towards innovation, technical change and nation’s progress. The universities are the centres of higher education, learning and research. The libraries in the universities play an important role for promoting such research and the researchers are the users of the pinpointed, exhaustive and up-to-date information in the university libraries. Herman points out that the integration of electronic resources into academic work is progressively harnessing the new technologies to scholarly information-gathering endeavors and characterizes the information activity of university faculty in an increasingly electronic environment (Gowda & Shivalingaiah 2009)⁴.

India has a complex higher education system, being the third largest one in the world, next only to China and the United States and comprising more than 471 universities, 22,064 affiliated colleges, and 5.21 lakh faculty members. During the academic year 2008-2009, the total number of students enrolled in the formal system of education in India was 123.77 lakh with 15.89 lakh affiliated to universities and 107.88 lakh to colleges. However, all educational institutions in India, especially the universities, face acute shortage of funds to subscribe to international and scholarly journals. It is estimated that a typical university in India subscribes to only less than 200 international journals. Moreover, some of the Indian universities do not subscribe to any international journals at all. While there are more than 50000 peer-reviewed scholarly journals, all research institutions and universities in India put together had combined subscriptions to only around 1,500 journals in print till recently (Arora & Kruthi 2010)⁵.
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The advent and advancement of Information and Communication Technology (ICT) has revolutionized the usefulness of information during the past few decades. This in turn has led to the development of information services with the effective association of the academic libraries, and facilitated the maximum utilization of information resources. In a university environment, electronic sources of information are very popular among the different academic communities because they enjoy a number of advantages over the traditional sources.

Libraries all over the world have felt the resonance of the global economic depression. Their budgets keep shrinking while the cost of resources together with the demand for them has a steady upward graph. Financial assistance to libraries from governmental and other agencies also shows a reverse trend. The net result is the inability of the library to rise to the expectation of the users.

The number of libraries in India which struggle for survival amidst this encircling gloom are not few. Some even find it difficult to pay wages to the staff, leave alone meeting other expenses on maintenance of buildings, classroom facilities, laboratories, hostels and so on (Vinod 2006). Operating under a deficit fiscal regime, they find their funds quite insufficient to meet the growing demands. The total dependence of the universities on the state funding has become a problem, as most state governments are themselves bankrupt. They are not in a position to meet the growing cost of higher education (Sreevasthava 1995). The accelerated pace of declining financial supports is further compounded by the ever-increasing demand for the micro and emerging information. It is in this context, the application and adoption of Library Consortium can be viewed as a solution to the much-vexed problems of information paucity.
As already mentioned, the purchase of and subscriptions to information resources has become difficult in the context of the financial crunch suffered by the libraries. The escalating price of the rapidly growing number of e-journals and databases has forced the libraries to think of alternative option of subscribing to the e-resources. Libraries in the universities have already made a shift from total dependence on print format to increasing use of e-resources. The e-journals and e-resources have their limitations, too. But accessing them globally places the user in a very advantageous position. In order to solve these problems and meet the user expectations, the libraries were forced to find an alternative source within their limited resources. Perhaps the formation of consortia is an answer to this problem. (Premchand, Murthy & Chandel 2005).

1.2 ORIGIN OF LIBRARY CONSORTIA

According to Kopp (1998), Melvin Dewey wrote about library cooperation in an issue of the library journal in 1886 and 1887. E. A. Mac presented his views on cooperation v/s competition in the same journal in 1888. ALA has formed a cooperation committee whose report was published in American Library Association (ALA) Bulletin in the 1880s. During a symposium organized by ALA on the topic “the library of tomorrow” in 1939, R. D. Downs presented a futuristic view of library cooperation in his paper “One For All”; a historical sketch of library cooperation - 1930-1970. During 1970 the US office of Education commissioned the System Development Corporation (SDC) to carry out a nationwide study of the academic library consortia to develop a fund of descriptive and prospective information about the activities of academic library consortia and provide guidance to libraries that were forming or planning to form consortia (Yogendra Singh).
1.3 LIBRARY CONSORTIA

Consortium is a term, which has many meanings. According to Webster's 3rd new International Dictionary, Library consortia is "an agreement, combination, or group formed to undertake and enterprise beyond the resources of anyone member" (Merriam Webster On-line Dictionary 2008).  

On-line Dictionary for Library and Information Science (ODLIS) defines Library Consortia as "an association of independent Libraries and/or Library systems established by a formal agreement, usually for the purpose of sharing". Membership may be restricted to a specific geographical region, type of Library (Public, Academic, and Special) or subject specialization. (ODLIS)

Oxford Advanced Learners Dictionary describes ‘consortium as a group of people, countries, and companies etc. who are working together on a particular project’. A library consortium is a group of libraries who join together and agree on the basis of legal terms and conditions to share their information resources to satisfy the need of information seekers of those participating libraries.

The scope of the concept of consortium has now shifted from mere sharing of information resources of libraries to sharing of expertise and also exploring the information need for libraries to make the most effective use of their funds collectively and efficiently. (Cholin). The Library consortia aim to establish cooperation at local, regional, national and international levels for sharing and utilizing maximum resources among a group of libraries at a reduced cost, time, space and energy.

The main aim of a consortium is to maximise the accessibility of information, minimise the cost and duplication without losing the individual
identity. A library consortium is a strategic alliance of libraries with a common interest, not under the same institutional control, but usually restricted to a geographical area, number of libraries, types of materials, or subjects of interest, which is established to develop and implement resources sharing among the members. Consortia are regarded as an effective strategy to increase the buying power and unlimited access to electronic resources.

Publishers and vendors offer heavy discount to their products under consortia purchase. Hence member libraries can save significant amount of library finances. In the age of information and publication explosion, a vast measure of literature is being published in every field of knowledge every day. Accordingly, the expectations of the users are always great. The ever-increasing cost of the books, journals and e-resources, however, belies the hope of the users. Therefore, with the limited financial resources at hand, the users have no better option than to adopt consortia mode of acquisition of electronic resources.

1.4 NEED OF LIBRARY CONSORTIUM

The consortium facilities enable the member libraries to get the benefit of wider access to electronic resources at affordable cost what a member library cannot achieve in its individual capacity. Moreover, the changing library environment makes changes in the expectations of the users regarding the resources they like to access, its quantity, quality, format etc. Only web-based electronic resources can give a solution to the multi-faceted problems of the users.

1.4.1 The reasons for forming Library Consortia are:

- Difficulty to maintain subscription to e-resources, particularly subscription to the core journals

- Frequent hikes in the price of e-resources
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- Shrinking fiscal provision for libraries
- Exponential growth of resources, particularly e-resources which have posed challenges to acquire all available material demanded by the users.
- Changing need of the user to access to their learned journals.
- Rational utilization of library fund and so on. (Ramaiah, Reddy & Kumar 2007)\(^{15}\).
- Less space and manpower are required for maintenance
- Eco friendly
- Many users can use the same information simultaneously

1.5 RESOURCE SHARING

Co-operation among libraries started long ago, beginning with the practice of inter-library loans due to tremendous proliferation of knowledge all over the world, libraries began to think about resource sharing within a group and among groups of libraries. This practice could help them become privy to vast area of information resources, staying within the limited budget. In a way, this practice helped integration of libraries for resource sharing through the principle of collection development.

In the glossary of Library and Information Science, resource sharing is described as ‘a means of covering a variety of activities engaged by a group of libraries for the purpose of improving services and/or cutting costs.’ For collection development, participating libraries should come together and cooperate in two broad areas: a) developing the collection on shared basis; and b) developing services by exploiting such collection. Resource sharing may be taken up by formal or informal agreement or by contract at a local,
regional or international level. The resources shared may be print documents, online resources, databases, network etc. The organizations engaged in the resource sharing process form the consortia network.

1.6 CONSORTIUM MODEL

A number of consortium models have emerged in India based on funding sources and participants’ affiliation. Patil & Savanur (2006)\textsuperscript{16} have listed the following models:

- **Open consortium**- In this model, libraries are free to join and leave the consortium as and when they please. Example FORSA, SNDT’s, LISA and INDEST.

- **Closed group consortia**- This type of consortium is formed by coalition, affiliation and collaboration among exclusive member libraries. Example CSIR, DAE & IIMs.

- **Institution headquarters funded**- As the name indicates it is funded by institutions. Example TIFR and its branch libraries.

- **Centrally funded**- In this type a parent body or the coordinating agency will have the financial responsibility for running the consortium. Example CSIR, INDEST, UGC- INFONET.

- **Shared budget**- In this type of consortium, management of fund and other aspects are handled individually by the member libraries. Example FORSA, IIMs and HELINET.

- **National Consortium**- This is a model perceived at national level which includes member libraries from one country. Example, INDEST, UGC-INFONET.
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- Publisher’s initiatives- Certain publishers also encourage consortium formation by giving a hefty discount in prices to the member libraries. Example Emerald full text Library.

1.7 INTERNATIONAL LIBRARY CONSORTIA

As per the latest trend, a consortium is not restricted to one geographic region but it has become a global phenomenon today. Many professional associations and network centres have been running various successful library consortia which are setting the examples at global arena. The Net Library, an e-Content division of OCLC (Online Computer Library Centre, Inc.) has increased its boundaries by subscribing to thousands of scholarly books from various prominent publishers and making it available to the member libraries. Net Library has also been signing agreements with many leading libraries to convert their print collection into electronic form to strengthen the library coordination all around (Grogg & Ashmore, 2005)\textsuperscript{17}. In UK, CURL (Consortium of University Research Libraries) is being run with the motive to increase the ability of research libraries in terms of sharing resources for the benefit of the local, national and international research community. The FinELib (Finland National Electronic Library Consortium) is a national consortium comprising all universities, polytechnics and public libraries as well as various research institutes of Finland.

In Thailand, THAILINET (Thai Academic Libraries Network) and PULINET (Provincial University Library Network) were merged together to formulate ThaiLIS (Thai Library Integrated System) consortium for improving the higher educational system in the country. The HEAL-Link (Hellenic Academic Libraries Link) is the consortium aimed at developing cooperation involving all the academic libraries in Greece. The same way, primary goal of the NEICON (National Electronic Information Consortium) is to provide the Russian organizations with access to scientific information
resources via the Internet. This consortium includes classical and specialized universities, public libraries, academic institutes and other noncommercial organization in the country (Hormia-Poutanen, 2005).18

In China, CALIS (China Academic Library and Information System) funded by the Chinese Government is a national academic library consortium. The GAELIC (Gauteng and Environs Library Consortium) is a biggest library consortium in South Africa with the objective of providing speedy information cost-effectively(Darch, Rapp & Underwood 1999)19. Higher Educational Library Information Network (HELIN) Consortium, USA is a joint venture of academic and health libraries of the country. The program GALILEO (Georgia Library Learning Online) is the consortium of University System of Georgia. It is covering more than 2000 academic institutions like K-12 schools, public libraries, research institutions and colleges etc. The Ohio LINK, The Pennsylvania Academic Library Consortium (PALCI) and various other library consortia in USA are working to provide better information services to their members with minimum financial input (Hiremath2001)20.

The International Coalition of Library Consortia (ICOLC) is known as the consortium of consortia. This self organized international group is providing listing of nearly 200 consortia from all across the world. The Yale University Library, Connecticut, USA keeps the record of the ICOLC meetings and maintains its public web site. It can be seen that all nations are taking keen interest for providing access to on-line scholarly resources. The reason for the rapid growth of library consortia is well indicated by Allen, Hirshon & Helmer 199821, as ‘the most important development for academic libraries during the current decade has been a move from organizational self-sufficiency to a collaborative survival mode as personified by the growth of library consortia’(Chauhan, Kaur & Chand)22.
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1.8 LIBRARY CONSORTIA IN INDIA

Indian academic libraries are no exception to the so called financial crisis. They are also gradually shifting from print format to electronic format. Though electronic sources have their own limitations, accessing large number of e-journals and other e-resources through consortia mode is a significant advantage.

Library cooperation and resource sharing in India signified in 1980s with the advent of various library networks. But at national level, in the domain of higher education it was started with the establishment of Information and Library Network Centre (INFLIBNET) (http://www.inflibnet.ac.in). INFLIBNET Centre is a national body established by the University Grants Commission of India in 1996 for interlink of all the universities and R & D institutional libraries of the country for resource sharing at national level. The center has put its best efforts to give computerized environment to the academic libraries of the country. The history of library consortia for on-line subscription and on-line access in the country is just a decade old. Various subject-oriented consortia were established to improve the quality and status of education, research and development in 1990s. Forum for Resource Sharing in Astronomy and Astrophysics (FORSA), one of the oldest library consortia in India for physics related subject areas was established in 1982 with its headquarter at Bangalore. Subsequently, the consortia like Council for Scientific and Industrial Research consortium (CSIR e-Journals consortium) with its headquarter at NISCAIR, New Delhi, was founded for scientific and technical information for CSIR’s Labs. The NISCAIR has been entrusted with the task of implementation of this project. Indian National Digital Library in Engineering and Science and Technology (INDEST) for engineering and technology related institutions, Tata Institute of Fundamental Research...
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(TIFR) consortium is for scientific and technical subject areas (Prem Chand, Murthy & Chandel, 2005) \(^{24}\), IIMs (Indian institute of Management) consortium is for management subject areas, and Health Science Library Network (HELINET) for medical sciences subject areas etc. are doing exceptionally well in their respective subject areas.

Various other organization have also established consortia for their specific information needs like Indian Council of Agricultural Research (ICAR), Indian Space Research Organization (ISRO), Indian Council of Social Science Research and Defense Research and Development Organization (DRDO) etc. UGC-INFONET Digital Library Consortium is the prestigious programme of University Grant Commission. This consortium is targeting to provide free flow of scholarly literature of all areas of learning from across the world to Indian Universities and other institutions dealing with higher education (Chauhan, Kaur & Chand) \(^{25}\). In this respect, the contributions and the benefits of electronic information resources and services provided by UGC-INFONET are a mile stone in the history of Indian Higher Education sector.

1.9 AN OVERVIEW OF UGC-INFONET

1.9.1 UGC-INFONET

The University Grants Commission (UGC), with its responsibility to coordinate and maintain high standards of University education in India, has launched an ambitious programme to bring about a qualitative change in the academic infrastructure, especially for higher education. Under this initiative, the UGC facilitates modernization of university campuses with state-of-the-art campus-wide networks and has set up its own nationwide communication network named UGC-INFONET with INFLIBNET as its executing and coordinating agency. The scheme was inaugurated by the then Hon’ble Prime
Minister of India, Shri Atal Bihari Vajpayee with the commencement of UGC’s Golden Jubilee celebrations on 25th December, 2002.

For the proper implementation of the project, the services of a national Internet Service Provider (ISP) and other agencies that have a national presence to provide Internet connectivity for all the UGC affiliated universities were roped in. Besides providing connectivity, they were supposed to conceptualize the e-resources, plan, establish and maintain network and communication infrastructure for Indian Universities under the purview of UGC. The UGC had signed an MoU with the ERNET which was valid till Mar 31st, 2010.

ERNET India, a society under the Ministry of Communications and Information Technology, has partnered with the University Grants Commission in the setting up of UGC- INFONET. Under this programme it is proposed to use Information and Communication Technology (ICT) and Internet to transform the learning environment from mono-dimensional to multi-dimensional.

1.9.1.1 Role of INFLIBNET

As was stated earlier, the University Grants Commission (UGC) tries to enhance and ensure high standards of education in the Indian Universities. Its ambitious programme of introducing UGC-INFONET in this regard is spear-headed through INLIFIBNET which is responsible for execution and monitoring of the entire project. The Information and Library Network (INFLIBNET) Centre, was established in 1996. The first initiative of UGC-INFONET Connectivity Programme was to provide networking of university campuses with state-of-the-art campus-wide networks and Internet bandwidth. The second one was called the UGC-INFONET Digital Library Consortium and it provides access to selected scholarly electronic journals and databases.
in different disciplines for the benefit of the academic community all over India (http://www.inflibnet.ac.in/econ).  

1.9.1.2 Objectives of INFLIBNET

The primary Objectives of the INFLIBNET are:

a) To promote and establish computer-based networking and modern communication facilities with a view to improving the capability to access and transfer information that provide support to scholarship, learning, research and academic pursuits through the cooperation and involvement of the agencies concerned (e.g. ERNET)

b) To establish an information and library network - a communication network for linking libraries and information centres in universities, deemed universities, colleges, UGC information centres, institutions of national importance and R&D institutions, etc. avoiding duplication of efforts;

i) To promote and implement computerization of operations and services in the libraries and information centres of the country, following a uniform standard

ii) To evolve standards and uniform guidelines in techniques, methods, procedures, computer hardware and software services, and promote their adoption in actual practice by all libraries, in order to facilitate pooling, sharing and exchange of information towards optimal use of resources and facilities

iii) To evolve a national network interconnecting various libraries and information services in the country and to improve capability in information handling and service
iv) To provide reliable access to the document collection of libraries by creating On-line Union Catalogue of serials, theses/dissertations, books, monographs and non-book materials (manuscripts, audio-visuals, computer data, multimedia, etc.) in various libraries in India

v) To provide access to bibliographic information sources with citations, abstracts etc, through indigenously created databases of the sectoral information centres of NISSAT, UGC information centres, city network and such others by establishing gateways for on-line accessing of national and international databases held by the national and international networks and centres respectively

vi) To develop new methods and techniques for achieving valuable information available as, manuscripts and information documents in different Indian languages, in the form of digital images using high density storage media;

vii) To optimize information resource utilization through shared cataloguing, Inter-library loan services, catalogue production, collection development and thus avoiding duplication in acquisition to the extent possible

viii) To enable users dispersed all over the country, irrespective of location and distance, to have access to information regarding serials, theses/dissertation, books, monographic and non-book materials by locating the sources wherever available and to obtain it through the facilities of the INFLIBNET and union catalogues of documents

ix) To create databases of projects, institutions, specialists, etc. for providing on-line information services;


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x) To encourage cooperation among libraries, documentation centres and information centres in the country, so that the resources can be pooled for the benefit of helping the weaker resource centres by stronger ones; and

xi) To train and develop human resources in the field of computerized library operations and networking to establish, manage and sustain INFLIBNET

c) To facilitate academic communication amongst scientists, engineers, social scientists, academicians, faculty members, researchers and students through electronic mail, file transfer, computer /audio/ video conferencing etc.

d) To undertake system design and studies in the field of communication, computer networking, information handling and data management;

e) To establish appropriate control and monitoring of system for the communication network and organize maintenance;

f) To collaborate with institutions, libraries, information centres and other organizations of India and abroad in the fields relevant for realizing the objectives of the centre;

g) To promote R&D and develop necessary facilities and create technical positions for realizing the objectives of the centre;

h) To generate revenue by proving consultancies and information services;

i) To do all other things as may be necessary, incidental and/or conducive to all or any of the above mentioned objectives. (http://www.inflibnet.ac.in)
1.9.1.3 ACTIVITIES OF INFLIBNET

The major activities of INFLIBNET are:

a) Library Automation,
b) Software Development,
c) Human Resource Development,
d) Development of Union Databases,
e) Development of Bibliographic Standards,
f) Provision of Information Services,
g) Document Delivery Service, and
h) Networking Facilities.

1.9.1.4 Library Automation

INFLIBNET provides financial as well as technical assistance for the automation of University Libraries. A number of university libraries have undertaken retrospective conversion of library catalogues with the assistance of INFLIBNET.

1.9.1.5 Software Development

Considering the requirements of the library automation projects of universities and colleges, a library automation package was developed. The first version of SOUL (Software for University Libraries) was released in 2000 and the second version was released in 2009. As on today, SOUL has got 2150 installations across the country.
1.9.1.6 Development of Bibliographic Standards

To ensure quality, consistency and standardization, efforts are made to incorporate international standards such as Unicode, MARC-21, AACR2, ISO 2709 etc. into the products and services of the centre. INFLIBNET Centre is a member of NISO (National Information Standards Organization), ISO (International Organization for Standardization) and BIS (Bureau of Indian Standards).

1.9.1.7 Human Resource Development and Consultancy

Training of manpower working in the university and college libraries in connection with the use of IT is an important objective of the INFLIBNET and has been given due priority. The training courses of four-week duration for operational staff and workshop of one-week duration for senior library staff working in the university libraries, with focus on the management of automation and networking are being organised periodically.

The INFLIBNET’s Regional Training Programmes on Library Automation (IRTPLA), a new series of training courses are conducted at different locations in collaboration with universities across the country to train library professionals from college and university libraries at regional levels with emphasis on regional languages.

Responding to increasing influx of new information technology and its applications in libraries, the centre has conducted specialised workshops on Website Designing and Hosting, Network Configuration and Management, E-resources Management, Orientation and Awareness Programme on Access to E-resources provided to the universities under the UGC-INFONET digital Library Consortium.
Apart from these courses, several other collaborative training programmes are being conducted for AIR Libraries, ICSSR/NASSDOC, ICAR-NATP and Kendriya Vidyalayas Sanghatan School Libraries. The Centre also conducts two annual national conventions namely CALIBER (Convention on automation of Libraries in Education and Research Institutions) and PLANNER (Promotion of Library Automation and Networking in North Eastern Region).

1.9.1.8 Publications of the Centre

The centre brings out the following publications regularly:

- INFLIBNET Newsletter (Quarterly)
- Guidelines for data capturing (A Manual)
- Proceedings of the CALIBER (Annual)
- Proceedings of the PLANNER (Annual)
- Information Brochures on INFLIBNET
- Annual Reports
- Course materials on various workshops and training programmes
- INFLIBNET Diary
- National Union Catalogue of Serials in Academic Libraries. (www.inflibnet.ac.in)

INFLIBNET has taken up yet another ambitious project called N-LIST. Under MHRD National Mission on Education through ICT, it is proposed to set up the National Library and Information Services Infrastructure (N-LIST) for scholarly content. INFLIBNET Centre acts as nodal agency and National Monitoring Agency for the execution of the N-LIST project. Universities covered under Phase I of UGC-INFONET would get access to selected e-resources subscribed by INDEST-AICTE. The Core members of INDEST (IITs, Indian Institutes of Science, and selected NITs)
would get access to the selected e-resources subscribed by UGC-INFONET Digital Library Consortium. Twelve thousand Colleges (12 B status) would be provided access to the selected e-resources subscribed by UGC-INFONET Digital Library Consortium for its member universities. Only 1933 colleges have registered so far for inclusion.

1.9.1.9 Aims of UGC-INFONET

UGC- INFONET will be a boon to the higher education system in many ways:

- UGC-INFONET will become a vehicle for distance learning to facilitate spread of quality education all over the country.
- UGC- INFONET will be a tool to distribute education material and journals to remotest of areas.
- UGC- INFONET will be a source for researchers and scholars for tapping the most up-to-date information.
- UGC- INFONET will form a medium for collaboration among various users like the teachers, students, research scholars and students not only within the country but all over the world.
- UGC- INFONET will be an Intranet for University Automation.
- UGC- INFONET will encompass the entire University System for the most efficient utilization of precious network resources.
- UGC- INFONET will establish a channel for Globalization of Education and facilitate the universities in marketing their services and development.


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1.9.1.10 Initiatives of UGC-INFONET

UGC-INFONET has two major initiatives of UGC-INFONET Internet Connectivity Programme and UGC-INFONET Digital Library Consortium.

1.9.1.11 UGC-INFONET Internet Connectivity Programme

The University Grants Commission has launched this ambitious programme to bring about a qualitative change in the academic infrastructure, especially for higher education. Under this initiative UGC tries to modernize the university campuses with state-of-the-art campus-wide networks and setting up its own nationwide communication network called UGC-INFONET Internet Connectivity. Initiated in 2002, it provides Internet connectivity to universities under the purview of the UGC.

Figure 1.1 represents the mirror sites of the INFONET connectivity programme.
Figure 1.1

Source: www.ugcinfonet.ac.in29
1.9.1.12 Aims and Objectives

The rapid pace, with which the Communication and networking technology is evolving to meet the ever-increasing requirement of providing information in any form, at anytime, anywhere demands an innovative outlook. Device-independent networks are set-up to enable flexibility of access, and also meet the requirements arising out of convergence of technologies. Regular technological inputs are necessary to upgrade the network infrastructure and to ensure delivery of upcoming applications and content to the education and research community in the country. The UGC and INFLIBNET have joined hands with ISPs to meet these challenges. The UGC-INFONET provides Internet bandwidth, a pre-requisite for delivery of scholarly content subscribed through the UGC-INFONET Digital Library Consortium. The following are the salient features of UGC-INFONET Connectivity Programme.

- Serves as a vehicle for distance learning and facilitates the spread of quality education all over the country;
- Facilitates delivery of educational materials including electronic journals and bibliographic databases to the remotest areas of the nation;
- Serves as a source for researchers and scholars for tapping the most up-to-date information;
- Acts as a medium for collaboration among teachers and students, not only within the country but all over the world;
- Facilitates Intranet infrastructure for the beneficiary universities; and
Serve as a channel for globalization of education and facilitates the universities in marketing their courses and projects developed through their R & D activities.

The scope of work assigned to the ISPs as per the MOUs to meet the objectives are detailed below:

- Designing network infrastructure for the UGC-INFONET connectivity programme;
- Providing space to the universities / UGC for hosting their web sites;
- Installing equipments and establishing Internet connectivity at the universities;
- Training of personnel from universities to manage and maintain their networks and connectivity over ISP's backbone in collaboration with INFLIBNET; and
- Providing mailing and other services to the universities and the UGC offices

### 1.9.1.13 Eligibility / Targeted Universities

All universities covered under Section 12 B of the UGC Act, 1956 (currently 171) are eligible to join the UGC-INFONET Connectivity Programme. Initially, 50 universities with potential for excellence in research were covered under the scheme. Subsequently, the service was extended to more universities.

The scheme has now been extended to more than 200 universities and all Inter-University Centres of the UGC in the year 2011. All universities in North-east have been given 2 Mbps Internet bandwidth on priority basis under
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the special drive. New universities joining the scheme will get 12 B status from UGC.

1.9.1.14 Governance

The scheme is operated and executed by the INFLIBNET Centre under the guidance of the Central Connectivity Monitoring Committee (CCMC) constituted by the UGC. CCMC decides detailed architecture and type of connectivity options and bandwidth for each university in consultation with universities. The Committee also approves one-time cost and tariff for annual subscription and terms of payment for various types of connectivity. The CCMC is constituted by the UGC consisting of the following members:

- Chairman: An Expert in IT / Computer / Communication Science to be appointed by the UGC in consultation with its Chairman, Governing Body, INFLIBNET Centre.
- Joint Secretary (IUC)
- Member of the Governing Body, INFLIBNET (1)
- Nominee from Central Universities (1)
- Nominee from State Universities (1)
- Nominee from University in North Eastern Region (1)
- Nominee from the IUCs (1)
- Nominee from IITs / IISc / Institutions of higher learning (1)
- Senior Scientist from INFLIBNET (1)
- Convener: Director, INFLIBNET Centre (Ex-officio)
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1.9.1.15 Implementation Methodology

Internet Service Providers (ISPs) maintain PoPs (Points of Presence) at various places for providing Internet connectivity to their subscribers. The ERNET India, the current ISP for INFONET Programme, maintains 15 PoPs in the country at various places along with a judicious mix of terrestrial and satellite-based wide area networks. All existing universities are connected to one of the 15 PoPs of ERNET using different types of connectivity options. Likewise, a university needs to get connected to one of the PoPs for getting connectivity to the National Wide Network.

After a university signs the MoU, the INFLIBNET Centre places a confirmed order with ERNET (current ISP) for providing Internet Bandwidth to a given university based on the technical feasibility. In the case of a new university, the ERNET invoices the INFLIBNET Centre for 90% of the one-time cost of equipment and 10% to the concerned university payable in advance, as per the agreement signed between the INFLIBNET Centre, ERNET, UGC and the university.

On receipt of payment, ERNET sets-up requisite communication equipments such as; IDU, Antenna, Modem, Router, etc. in the university at a place allocated by the University to INFONET Programme. The ERNET connects these equipments with one of the 15 PoP Centres. Each PoP, in turn, gets connected to the National / International Gateways as shown in the Figure given above.

1.9.1.16 Payment Modes and Training of Personnel in Universities

In the initial phase, the UGC had sanctioned and released funds to the universities with instructions to place orders for equipments and other accessories with ERNET India so as to connect the university with the Internet backbone of the ISP. From 2005 onwards, the UGC provides grant to
the INFLIBNET Centre for the UGC-INFONET Connectivity Programme, including the cost of Internet bandwidth and requisite communication equipments. All payments to ISP are made by the INFLIBNET Centre after verifying the connectivity provided to the university and usage of Internet bandwidth.

Manpower is a critical component for maintaining reliable and efficient network. Personnel responsible for looking after the UGC-INFONET connectivity in universities need proper training to maintain the network and Internet connectivity. Two levels of training programmes are offered by the INFLIBNET Centre in collaboration with the ISP.

The first level of training programme is offered for imparting basic knowledge required for maintaining the network. Training is conducted by ISP with support of INFLIBNET on mutually agreed terms. The place and schedule of training is decided by ISP in consultation with INFLIBNET Centre. The second and higher level of training is offered to skilled computer professionals who are already involved in the maintenance of computer LAN to further advance their network management skills for providing security, trouble shooting, Gateway level Anti-virus / SPAM protection, other security threats, proxy implementation, access policies management, etc. www.ugcinfonet.ac.in

1.9.1.17 Technology Options for Connectivity

UGC-INFONET is planned to overlay on the ISP's infrastructure including a nationwide terrestrial backbone and a complementary satellite Wide Area Network (WAN) with bandwidth ranging from 256 Kbps to 4 Mbps. Along with the connectivity, 16 IP addresses are given to each beneficiary universities for their servers and other network devices including proxy server, web server, mail server, list server, library server, digital library
Currently, depending on the ISP, (currently ERNET India), one of the following options is used for providing connectivity to universities depending upon the physical location of the university, its proximity with Point-of-Presence (PoP) of the ISP hub and bandwidth requirement:

- **Leases Lines (LL)**
- **Radio Link**
- **Broadband VSAT (FTDMA) / SCPC VSAT**

The chosen ISP is capable of providing a complete range of connectivity options to the universities depending upon their geographical location and bandwidth requirements. Since terrestrial media offers greater scalability and performance, efforts are made to connect the universities on the terrestrial media. Currently, the UGC-INFONET is a mix of terrestrial and satellite communication provided through VSAT.

**Leases Lines (LL)**

In localities where telecom network is well developed, currently ISP hires dedicated leased lines from telecom service providers like BSNL. Such links are primarily for 256 Kbps to 2 Mbps speeds. Since fibre optic connections facilitate better connectivity, efforts are being made to bring fibre links as near to a given university as possible. Most of the universities have potential to become hub of communication for the affiliated colleges. Therefore, basic service providers will be locating their terminals essentially at the university premises. In the year 2006, it was decided to provide 2 Mbps (1:1) LL connectivity and many universities are under the process of upgradation. Till now, 123 universities have already been upgraded to Leased Line 2 Mbps (1:1.).
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**Radio Link (RF)**

Universities, located within 30 Kms of the ISP's PoPs, are provided with dedicated radio links operating from 256 Kbps to 2 Mbps speeds. These links require line of sight clearance from the network mode to the concerned university. Radio links are reliable and operational cost includes only maintenance of the equipment and a nominal license fee.

**Broadband VSATs (FTDMA)/SCPC VSAT**

Due to the uneven and terrestrial limitations of the areas where universities are located, it is difficult to have only one type of connectivity especially with leased lines. Some of the remote universities are being served using broadband VSATs. These VSATs operate in a shared bandwidth mode for optimal utilization of the precious satellite resources. Since Internet traffic is asymmetric in nature, Broadband VSATs are optimized to receive high bandwidth (shared beam of up to 45 Mbps) and relatively smaller capacity for outgoing traffic (shared channel of up to 307 Kbps) from a university.

Many ISPs operate a Satellite based Wide Area Network (SATWAN) using C-Band transponder on INSAT-3C. SATWAN hub, located at a different place, supports Broadband VSATs. Single Channel Per Carrier (SCPC) VSATs are used for establishing dedicated two-way channels of 256 Kbps to 2 Mbps raw from Hub. SCPC VSATs are ideal for those universities, which are located in remote areas but wish to host their own Internet server for providing access to their information through Internet all over the world. A number of universities are provided with FTDMA VSATs.
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1.9.1.18 Responsibilities of Universities

- Liaison with the ISP to establish the link and Internet bandwidth (in case of new universities) and for maintenance of connectivity (in case of existing universities).
- Enter into a Service Level Agreement (SLA) with the ISP for establishment and maintenance of a link and the Internet bandwidth.

Internet Tariff Rates

Rates of the Internet bandwidth depend on the type of the connectivity provided to a university and its geographical location. These rates are given by ISP at the beginning of every financial year and are approved by the CCMC. The ISP is expected to offer revised rates if there is any discount offered on domestic as well as Internet bandwidth. This also includes the rates announced by national regulatory bodies like TRAI (Telecom Regulatory Authority of India) and other government agencies.

Several universities are located in the far-flung geographical locations where ISP may not have required communication channels. In such cases, yearly subscription may also include charges for last mile connectivity on actual basis, which is proportionate to the distance between the university and the nearest PoP / ISP Centre. Cost of UPS and Annual Link Maintenance (ALM) charges for the equipment provided are also included in the contract. One-time cost of Leased Line includes the following costs of

i) Link procurement charges;
ii) Loop Modems (G 703) (1 Pair);
iii) Loop Modems (V35) (1 Pair) and
iv) CISCO Router (1841).
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As on the present, ISP (i.e., ERNET) charges Rs. 2,16,750.00 (approx.) as one-time cost for a leased line with 2 Mbps (1:1) bandwidth which is to be paid by the University for changing the hardware where other technology options are used.

1.9.1.19 Bandwidth Monitoring and Policy for Bandwidth Enhancement

Uses of Internet as well as downloads of articles from e-resources in the universities are monitored by the INFLIBNET and associated Committees such as CCMC and NSC from time-to-time. The utilization of bandwidth is monitored at an interval of every five minutes using web analyzer software tools. An average usage graph is generated on daily, monthly and yearly basis.

Such utilization graphs are also produced by ISP for each beneficiary university to claim subscription charges from the INFLIBNET Centre on quarterly basis. In cases of breaks or low utilization of bandwidth in the graph or failure of the link, clarification is sought from the ISP / concerned university before clearing the payments. Universities that are not using the Internet bandwidth optimally are reported to the CCMC and corrective measures are taken. Disputes, if any, in the payment conditions or methods are placed in the meetings of the CCMC for further clarification. Sample bandwidth utilization graph is presented in Figure 1.2.
Internet bandwidth may be increased from the existing 2 Mbps to 4 Mbps for universities whose utilization of existing bandwidth is assessed as good. Priority will be given to those universities which do not have means to purchase bandwidth on their own. Universities may send their requests for increase in bandwidth based on utilization of existing bandwidth. A request for increase in bandwidth should be supported by the number of downloads of articles from e-resources provided through the UGC-INFONET Digital Library Consortium.

1.9.1.20 How to Join the Scheme

Universities covered under 12B Act of the UGC that are already benefiting from the scheme need not apply. Their connectivity and Internet bandwidth is renewed annually by the INFLIBNET Centre through funding from the UGC automatically. However, they are requested to report the status
Chapter 1

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of their connectivity and issues, if any, to the INFLIBNET Centre on regular intervals. Universities are also requested to produce bandwidth utilization certificate on quarterly basis.

New universities covered under the 12B Act of the UGC, desirous of joining the UGC-INFONET Connectivity Programme, may apply in prescribed application form with a formal covering note addressed to the Director, INFLIBNET with a copy of the letter from the UGC regarding its 12B status. On receipt of application, 4 copies of MoU are sent to the University for its Signature.

The Network was switched to BSNL backbone w.e.f. 1st April, 2010 and renamed as UGC Infonet 2.0.

1.9.1.21 UGC-INFONET 2.0

As per the instruction of UGC and direction of CVC, an ISP is chosen through open tender for providing connectivity under the scheme and is named as UGC Infonet 2.0. INFLIBNET places an order as per the technical requirements recommended by Central Connectivity Monitoring Committee (CCMC) for connecting 181 universities. UGC Infonet 2.0 is the upgraded network infrastructure to connect Universities with 10 Mbps (1:1) Internet Bandwidth as part of the scheme. The network service is provided by BSNL at national level and the Gujarat BSNL Circle is the implementing agency.

Of the scheme, 10 Mbps (1:1) Leased line was being established in 182 universities by using Fibre to provide Internet Services. INFLIBNET was responsible for executing and monitoring the entire project. Since the UGC-INFONET mainly provides Internet bandwidth, a pre-requisite for delivery of scholarly content subscribed through the UGC-INFONET Digital Library Consortium, National Knowledge Network is rolled out to meet the heavy demand of Internet bandwidth in universities. The scheme has now been
withdrawn and all universities have migrated to NKN/NME-ICT project. The site is maintained for giving information about UGC INFONET.

INFLIBNET Centre has proposed the modified format for UGC Infonet scheme to provide financial support to universities for augmenting IT Infrastructure which include Video conferencing facility as well.

**Table 1.1**

<table>
<thead>
<tr>
<th>Status of Universities as on 31st Dec 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Universities Covered</td>
</tr>
<tr>
<td><strong>2</strong> Funds Released From UGC</td>
</tr>
<tr>
<td><strong>3</strong> Links Commissioned by BSNL</td>
</tr>
<tr>
<td><strong>4</strong> Links under INFONET</td>
</tr>
<tr>
<td><strong>5</strong> Universities connected to NKN and excluded from Infonet</td>
</tr>
<tr>
<td><strong>6</strong> Universities Disconnected to NKN/NME – ICT on Mar. 2012</td>
</tr>
<tr>
<td><strong>7</strong> Universities Migrated to NKN/NME-ICT on 31 Dec. 2011</td>
</tr>
<tr>
<td><strong>8</strong> Universities Migrated to NKN/NME-ICT on 31 Oct. 2011</td>
</tr>
<tr>
<td><strong>9</strong> Universities Migrated to NKN/NME-ICT on 15 Sept. 2011</td>
</tr>
<tr>
<td><strong>10</strong> Universities Migrated to NKN/NME-ICT on 31 Aug 2011</td>
</tr>
<tr>
<td><strong>11</strong> Universities Migrated to NKN/NME-ICT on 30 Jun 2011</td>
</tr>
<tr>
<td><strong>12</strong> Universities Migrated to NKN/NME-ICT on 30 April 2011</td>
</tr>
<tr>
<td><strong>13</strong> Universities Migrated to NKN/NME-ICT on 15 Mar 2011</td>
</tr>
<tr>
<td><strong>14</strong> Universities Migrated to NKN/NME-ICT on 31 Dec 2010</td>
</tr>
<tr>
<td><strong>15</strong> Order Cancelled due to NKN Connection</td>
</tr>
<tr>
<td><strong>16</strong> New Central Universities</td>
</tr>
<tr>
<td><strong>17</strong> North East Universities /Commissioned</td>
</tr>
</tbody>
</table>

Source: (http://www.inflibnet.ac.in/econ/)
UGC-INFONET is an ambitious program of UGC to interconnect all universities of the country with state-of-the-art technology. It is a medium for collaboration among teachers, researchers and students, not only within the country but all over the world. It is also working as a tool for distribution of quality information and e-Journals to remotest areas of the country. Overall, this program is helping to provide a more accurate and up-to-date information with productive communication within the higher educational system of the country. Accordingly, this program is aiming to bring a qualitative change in the higher educational research with greater efficiency. INFLIBNET has been entrusted with the responsibility of monitoring and executing the UGC-Infonet program in a systematic way. Infrastructure part, i.e. UGC-INFONET, is being taken care of by the Education and Research Network (ERNET) at New Delhi. However, quality of service, enhancement of bandwidth, subscription to resources, and access to information resources are being taken care of by INFLIBENT. Access to e-resources has been given to the universities under a phased manner. In the First Phase fifty universities were selected based on certain factors, viz. existing infrastructure, number of scientific researches, number of students and research scholars enrolled and Internet connectivity in the campus etc. Therefore, in January 2004, under the first phase, access was given to fifty universities and offered free access to a number of additional universities on a trial basis to bring them into the ambit of the programme. During the Second Phase, additional fifty universities were added in January 2005. In 2007, eighty four universities were added during the third phase. Other universities will get access to the e-resources once they get static network connectivity. These universities will be covered in the batches of 5 – 10 universities for accessing the subscribed e-resources.
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Under the consortium, more than 7,500 full-text scholarly electronic journals from 28 publishers across the globe can be accessed. The Consortium provides current as well as archival access to core and peer-reviewed journals. So far 190 Universities and 14 National Law Schools/Universities including all the Inter University centres (IUCs) of the UGC have enrolled in this consortium. The e-resources being subscribed by the Consortium covers subject areas such as Arts, Humanities, Social Sciences, Physical and Chemical Sciences, Life Sciences, Computer Sciences, Mathematics and Statistics, etc. The programme is funded by the UGC for universities under its purview and monitored by the INFLIBNET (Information and Library Network) Centre, Gandhinagar, Gujarat.

As has already been mentioned, the entire programme is being implemented in the three different phases. The consortium subscribes to high quality scholarly literature published by commercial, society and institute publishers in national and international level. The access is given to the universities which come under the preview of UGC. Users can browse, search and download millions of full text articles published in various journals. It is a landmark in the history of Indian Higher Education System.
Table 1.2

Resources subscribed by the UGC-INFONET Digital Library Consortium

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Resources</th>
<th>No. of Journals Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>American Chemical Society</td>
<td>37</td>
</tr>
<tr>
<td>2</td>
<td>American Institute of Physics</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>American Physical Society</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Annual Reviews</td>
<td>33</td>
</tr>
<tr>
<td>5</td>
<td>Blackwell Publishing</td>
<td>489</td>
</tr>
<tr>
<td>6</td>
<td>Cambridge University Press</td>
<td>224</td>
</tr>
<tr>
<td>7</td>
<td>Economic &amp; Political Weekly</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Elsevier Science</td>
<td>34</td>
</tr>
<tr>
<td>9</td>
<td>Emerald</td>
<td>29</td>
</tr>
<tr>
<td>10</td>
<td>Institute of Physics</td>
<td>46</td>
</tr>
<tr>
<td>11</td>
<td>JSTOR</td>
<td>1401</td>
</tr>
<tr>
<td>12</td>
<td>Nature</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Oxford University Press</td>
<td>206</td>
</tr>
<tr>
<td>14</td>
<td>Portland Press</td>
<td>8</td>
</tr>
<tr>
<td>15</td>
<td>Project Euclid</td>
<td>34</td>
</tr>
<tr>
<td>16</td>
<td>Project Muse</td>
<td>411</td>
</tr>
<tr>
<td>17</td>
<td>Royal Society of Chemistry</td>
<td>29</td>
</tr>
<tr>
<td>18</td>
<td>SIAM</td>
<td>14</td>
</tr>
<tr>
<td>19</td>
<td>Springer Link</td>
<td>1389</td>
</tr>
<tr>
<td>20</td>
<td>Taylor and Francis</td>
<td>1173</td>
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</tbody>
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Bibliographic Databases

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<th></th>
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<tbody>
<tr>
<td>1</td>
<td>SciFinder Scholar</td>
</tr>
<tr>
<td>2</td>
<td>MathSciNet</td>
</tr>
<tr>
<td>3</td>
<td>Royal Society of Chemistry</td>
</tr>
<tr>
<td></td>
<td>(6 Databases)</td>
</tr>
<tr>
<td>4</td>
<td>ISID</td>
</tr>
<tr>
<td>5</td>
<td>JCCC</td>
</tr>
<tr>
<td>6</td>
<td>Westlaw India</td>
</tr>
<tr>
<td>7</td>
<td>Web of Science (Through N-LIST Programme)</td>
</tr>
</tbody>
</table>

Source: www.ugeinfonet.ac.in
1.9.2.1 American Chemical Society (ACS) (http://www.pubs.acs.org/)

Subjects covered: Chemical and related Sciences

No. of Journals: 37

Accessible from: 1997 +

American Chemical Society was founded in 1876 and it is the world’s largest scientific society with more than 160,000 members. ACS advances knowledge and research through scholarly publishing, scientific conferences, information resources for education and business, and professional development efforts. The ACS also plays a leadership role in educating and communicating with public audiences – citizens, students, public leaders and others – about the important role that chemistry plays in identifying new solutions, improving public health, protecting the environment, and contributing to the economy.

The American Chemical Society provides the world-wide scientific community with a comprehensive collection of the most cited peer-reviewed journals in the chemical and related sciences. ACS publications offers 37 prestigious journals in addition to its weekly newsmagazines covering the chemical enterprise, Chemical and Engineering News. More than 100 Indian universities are utilising these resources through UGC INFONET. With the ACS Journal Archives, ACS Publications provide searchable access to over 130 years of original research in Chemistry, including more than 750,000 articles contained in 3 million plus pages of chemistry findings, dating back to the introduction of the Journal of the American Chemical Society in 1879. The prominent journals with higher impact factor are:

- Chemical Reviews
- Accounts of Chemical research
**1.9.2.2 American Institute of Physics (AIP) (http://www.aip.org)**

Subjects covered: Physics, Astronomy and related field of Science & Technology

No. of Journals: 18

Accessible from: 1997 +

American Institute of Physics (AIP) is dedicated to the advancement of Physics and serves as a federation of Physical Science societies and provides leadership through its own programmes and publications.

AIP is one of the world’s largest publishers of physics journals and produces the publications of more than 25 scientific and engineering societies through its New York based publishing division. AIP was founded in 1931 with a mission to serve Physics, Astronomy and related fields of science and technology and to extend services to the scientists, educators, R&D leaders and students. From the outset, AIP published journals on behalf of its member societies, for example, the Physical review for The American Physical Society. It also acquired or developed scientific journals of its own in fields where no single society had a mandate, notably the region between applied and academic physics. 18 full text journals with archival access from 1997 onwards could be accessed by the users from the member universities of the INFONET consortium.
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1.9.2.3 American Physical Society (http://www.aps.org)\textsuperscript{35}

Subjects covered: Physics

No. of Journals: 10

Accessible from: 1997 +

The American Physical Society (APS) was founded on May 20, 1899. The APS is providing high-quality products and services to its members and the scientific community. Searching on the on-line journals as well as access to references and full-text articles on PDF format and postscript files is controlled by user name and password for member subscribers and by IP address for institutional subscribers. Access is made available to 10 full-text journals from 1997 onwards and most of the universities in India are utilizing these resources through UGC-INFONET Consortium. The most prominent journals of the APS with highest impact factor are:

- Review of Modern Physics
- Physical Review Letters
- Physical review D (Particles, fields, Gravitations and Cosmology)

1.9.2.4 Annual Reviews (http://arjournals.annualreviews.org)\textsuperscript{36}

Subject covered: Bio-Medical, Physical and Social Sciences

No. of Journals: 33

Accessible from: 1997 +
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Annual Reviews founded in 1932 provide analytical and authoritative academic resources from 37 focused discipline within the Biomedical, life, Physical and Social Sciences. Annual Reviews’ content pages bring a variety of features including:

- Password Protected User Profiles
- Favorites Lists
- Custom Email Alerts
- Saved Searches

All Annual Reviews series are ranked within the top ten publications for their respective disciplines. Access is made available to 33 full text journals and archival access is provided to issues as far back as 10 years. Annual Reviews publications are among the highest cited publications by impact factor. The prominent journals are:

- Astronomy and Astrophysics
- Biochemistry
- Biomedical Engineering
- Biophysics
- Cell and Developmental Biology

1.9.2.5 Blackwell Publishing (http://www3.interscience.wiley.com)\textsuperscript{37}

Subjects covered: Science & Medicine and Social Sciences & Humanities

No. of Journals: 497

Accessible from: 1997 +

Wiley Interscience now includes journal contents formerly on Blackwell Synergy, providing access to more than 3 million articles across 1400 journals. Journals can be found by browsing Subjects Area-wise,
Product Type-wise or Search by Publication Title-wise. The subjects covered range across Medicine, Science, Social Science and the Humanities.

INFLIBNET subscribes to 497 journals published in the field of Medicine, Science, Social Science and the Humanities. Majority of the member universities of INFONET Consortium are accessing these resources.

As reported in 2006, Thomson Scientific (ISI) Journal Citation reports, the peer-reviewed journals of the Blackwell Publishing, ranked the highest in respect of the impact factor in the following categories.

In Sciences:

- Immunological Review
- FEMS Microbiology Reviews
- Ecology Letters
- American journal of Transplantation

In social Sciences:

- The Milbank Quarterly
- Monograph for the society for Research in Child Development
- Psychological Science
- Journal of child psychology and Psychiatry

1.9.2.6 Cambridge University Press (http://journals.cambridge.org/)

Subjects covered: Science & Technology, Medical and Social Sciences & Humanities
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No. of Journals: 223

Accessible from: 1997 +

Cambridge University Press is one of the oldest, world’s largest and most prestigious academic publishers in Humanities, Social Sciences, Medicine, and other Physical Sciences. Around 223 full-text journals are subscribed under the scheme and archival access is made available since 1997 onwards. The prominent journals with highest impact factor are:

Behavioural and Brain Sciences

- Psychological Medicine
- American political Science Review
- Development and Psychopathology
- Studies in second language acquisition
- Proceedings of the Nutrition Society
- Laser and particle Beams

- On line with the commitment of Cambridge University Press to advance learning, knowledge and research worldwide, the Press currently publishes over 300 peer-reviewed academic journals for the global market. Containing the latest research from a broad sweep of subject areas, Cambridge journals are accessible worldwide in print and online.

- The continued expansion of its journals’ list is being mirrored by a programme of long-term investment in its journals business so that its continued commitment to the academic community, and in particular to its society partners and customers, can be fulfilled both for the present and into the foreseeable future. Besides those journals owned by the Press itself, it publishes on behalf of over 100 learned and professional
societies and works closely with partners to ensure the optimum success of each journal.

- Delivery of journal content via the internet has led to new markets opening up across the world. These include libraries operating together as consortia, and institutions in the developing world becoming able to access journals for the first time. Cambridge is active in all these markets and works with many organizations to bring journals to research institutions across the globe. From North America to Sub-Saharan Africa, the dedication of Cambridge University Press to advancing knowledge is visible with the availability of its journals, seven days a week and twenty-four hours a day.

1.9.2.7 Economic and Political Weekly (EPW) (http://www.epw.in)

Subjects covered: Economics, Sociology, Political Science, History, Gender and Environment Studies.

No. of Journals available: 1

Accessible from: 2001+

The Economic and Political Weekly, published from Mumbai, is an Indian journal enjoying a global reputation for excellence in independent scholarship and critical inquiry. First published in 1949 as the Economic Weekly and since 1966 as the Economic and Political Weekly, EPW, as the journal is popularly known, occupies a special place in the intellectual history of independent India. For more than five decades EPW has remained a unique forum that, week after week, has brought together academics, researchers, policy makers, independent thinkers, members of non-governmental organisations and political activists for debates straddling economics, politics, sociology, culture, the environment and numerous other disciplines. The focus
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of the EPW is on economic issues, but it is truly a multidisciplinary publication covering sociology, political science, history, gender and environment studies. This is reflected in both the research (Special Articles) and current affairs (Commentary) sections. EPW, published by the Sameeksha Trust, a registered charitable trust, is the only social science journal of its kind in the world.

1.9.2.8 Elsevier Science (http://www.sciencedirect.com/)

Subject covered: Science & Technology, Medical and Social Sciences

No. of Journals: 1000

Accessible from: 1995 +

Elsevier Science is the most popular and multiple-media publisher of scientific, technical, health and life science information products and services, providing deepest coverage. More than 20000 products are being offered by these publishers which include journals, books databases, portals and other services. The number of journals available from this publisher comes to about 1000 with access available to 50 universities and archival access possible from 1995 onwards.

Full text articles and bibliographic information available through ScienceDirect covers a major portion of world’s science, technology and medicine. ScienceDirect is a part of Elsevier. Headquartered in Amsterdam, The Netherlands, the company is the world's largest scientific, technical and medical information provider and publishes of over 2,000 journals as well as books and secondary databases. Elsevier is a member of the Reed Elsevier plc group, a world-leading publisher and information provider. Operating in the scientific, legal and business-to-business sectors, Reed Elsevier provides high-quality and flexible information solutions to professional users, with
increasing emphasis on the Internet as a means of delivery. The most prominent peer-reviewed journals of Elsevier Science with the highest impact factor are the following.

- Cell
- Cancer Cell
- Immunity
- Cell metabolism
- Molecular cell

1.9.2.9 Emerald Publishers (http://www.emeraldinsight.com)

Subject covered: Library & Information Science

No. of Journals: 29

Accessible from: Vol. 1 +

Emerald, started in the year 1967, includes journals, books and publications. It was found to have sought to bridge the gap between the scholarly and practitioner world. The prominent feature of this publisher is that they are providing a widest range of Library & Information Science and Technology journals. Other features of Emerald include:

- High quality, peer-reviewed research journals.
- More than 3000 university libraries worldwide subscribe Emerald
- Outstanding Doctoral Research Awards has been introduced in collaboration with the European Foundation for Management
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Development (EFMD).

- The Emerald Group has acquired Research Media, a successful provider of information dissemination services to the scientific research community based in Bristol, UK.

Under UGC INFONET e-journal consortium, access is made available to 29 e-journals from Library and Information Science full text and database archives. The prominent journals with high impact Factor are the following.

- Journal of documentation
- ASLIB proceedings: New information perspectives
- On-line information review
- Program: Electronic library and information systems

Institute of Physics

1.9.2.10 Institute of Physics (IoP) (http://www.iop.org/EJ)

Subject covered: Physics

No. of Journals: 49

Accessible from: Vol. 1 +

Institute of Physics, popularly known as IoP is a well-known dedicated resource of high quality information in physical sciences. The Institute has a world-wide membership and is a major international player in scientific publishing and electronic dissemination of physics; setting professional standards for physicists and awarding professional qualifications; promoting physics through scientific conferences, education and science policy advice. This electronic database comprises of journals on various topics like bio-inspiration, biometrics, biomedical materials, astronomy, astrophysics,
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chemical physics and theoretical physics. The archive facilitates the researchers to access:

- 49 journals (including 7 in open access, from Vol.1 issue.1 onwards)
- Over 1000 volume years of journals
- Over 125,000 articles
- Over 1.5 million papers of scientific research papers

Features of IOPscience:

- Speed up research: find relevant content quickly with enhanced search filtering.
- Save time: re-run previous searches, tagging the favourite articles.
- Keep up to date: receive RSS feeds and email alerts when new content is published.
- Access more content: view articles plus preprints and news.
- Interact and share: embrace social bookmarking to share articles.
- Discover related research: explore relevant articles based on subject classification codes.
- Make it personal: customize your alerts, save articles of interest, and view newly published articles within your subject areas.
1.9.2.11 JSTOR (http://www.jstor.org)\(^{43}\)

Subjects covered: Sciences, Humanities and Social Sciences

No. of Journals: 2077

Accessible from: Vol. 1 +

JSTOR is a not-for-profit organization with a dual mission to create and maintain a trusted archive of important scholarly journals and to provide access to these journals as widely as possible. JSTOR offers both multidisciplinary and discipline-specific collections. JSTOR is not a current-issues database. Because of JSTOR’s archival mission, there is a gap, typically from 1 to 5 years, between the most recently published journal issue and the back issues available in JSTOR. JSTOR has a collection of 2076 journals aggregated from 700 publishers from more than 25 countries. The number of titles and publishers joining J-STOR is growing gradually. UGC- Infonet Digital Library Consortium members have got access to 2077 full text e-journals from Vol.1 issue1 onwards up to last three to five years gap depending on the original publisher rights.

1.9.2.12 Nature (http://www.nature.com/)\(^{44}\)

Subjects covered: Scientific Disciplines exclusively for Nature

No. of Journals: 1

Accessible from: 1997 +

Nature journal was founded in 1869 and has published most of the important scientific advances of the last 130 years. In 1999 the Nature titles were joined by imprints within the McMillan group to the Nature Publishing Group. It is an international journal publishing group with weekly periodicity.
The ‘Nature’ weekly journal is being made accessible to most of the universities under the INFONET Consortium from 1997 onwards.

1.9.2.13 Oxford University Press (http://www.oxfordjournals.org/)⁴⁵

Subjects covered: Sciences, Social Sciences & Humanities

No. of Journals: 198

Accessible from: 1996 +

As a major international publisher of academic and research journals, Oxford University Press (OUP) publishes well over 200 journals, many in partnership with the world’s leading prestigious learned societies. OUP collections cover life sciences, mathematics & physical sciences, medicine, social sciences, humanities, and law and include some of the most authoritative journals in their fields. Members of the UGC- Infonet Digital Library Consortium can access 206 journals from Oxford University Press.

1.9.2.14 Portland Press
(http://www.portlandpress.com/pp/journals/default.htm)⁴⁶

Subjects covered: Biochemical Sciences

No. of Journals: 9

Accessible from: 1996 +

Portland Press Limited is the wholly owned publishing subsidiary of the Biochemical Society. It is a not-for-profit publisher of journals and books
in the cellular and molecular life sciences. Members of the UGC-Infonet Digital Library Consortium can access 9 peer-viewed journals of Portland Press.

1.9.2.15 Project Euclid (http://projecteuclid.org/)

Subjects covered: Mathematical Sciences

No. of Journals: 36

Accessible from: 2002+

Project Euclid's mission is to advance scholarly communication in the field of theoretical and applied mathematics and statistics. Project Euclid is designed to address the unique needs of low-cost independent and society journals. Through a collaborative partnership arrangement, these publishers join forces and participate in an online presence with advanced functionality, without sacrificing their intellectual or economic independence or commitment to low subscription prices. Full-text searching, reference linking, inter-operability through the Open Archives Initiative, and long-term retention of data are all important components of the project.

The end result is a vibrant online information community for independent and society journals. This will assure that mathematics and statistics will continue to benefit from a healthy balance of commercial enterprises, scholarly societies, and independent publishers. Project Euclid was developed and deployed by the Cornell University Library and is jointly managed by Cornell and the Duke University Press.
Chapter 1

1.9.2.16 Project Muse (http://muse.jhu.edu/journals)\(^48\)

Subjects covered: Social Sciences & Humanities

No. of Journals: 297

Accessible from: 1995

Project muse is a leading provider of digital Humanities and Social Sciences content for the scholarly community. Since 1995 the Muse journal collections have supported a wide array of research needs at academic, public, special, and school libraries worldwide. Muse is the trusted source of complete, full-text versions of scholarly journals from many of the world's leading university presses and scholarly societies, with over 120 publishers currently participating.

Project MUSE's mission is to excel in the broad dissemination of high-quality scholarly content. Through innovation and collaborative development, Project MUSE anticipates the needs of and delivers essential resources to all members of the scholarly community.

1.9.2.17 Royal Society of Chemistry (RSC) (http://www.rcs.org/)\(^49\)

Subjects covered: Chemistry & Chemical Sciences

No. of Journals available: 29

Accessible from: 1997 +

The Royal Society of Chemistry (RSC) is the largest organisation in Europe for advancing the chemical sciences. RSC is the most prominent and independent organisation in Britain. It is supported by a worldwide network of members and an international publishing business. Its activities span
education, conferences, science policy and the promotion of chemistry to the public.

RSC fosters and encourages the growth and application of the chemical sciences by the dissemination of chemical knowledge. It provides a powerful search tool to find articles published by the RSC and archival access is made available for 29 full text journals with 6 databases from 1997 onwards. The most prominent per-reviewed journals of the RSC with the highest impact factor in chemistry are:

- Chemical society reviews
- Natural product reports
- Lab on a chip
- Faraday discussions

1.9.2.18 SIAM (http://epubs.siam.org/)

Subject covered: Mathematics

No. of Journals: 14

Accessible from: 1997

Inspired by the vision that applied mathematics should play an important role in advancing science and technology in industry, a small group of professionals from academies and industry met in Philadelphia in 1951 to start an organisation whose members would meet periodically to exchange ideas about the use of mathematics in industry. This meeting led to the organization of the Society for Industrial and Applied Mathematics (SIAM). SIAM exists to ensure the strongest interactions between mathematics and
other scientific and technological communities through membership activities, publication of journals and books, and conferences.

1.9.2.19 Springer Link (http://www.springerlink.com/)\textsuperscript{51}

Subjects covered: All disciplines

No. of Journals: 1950

Accessible from: 1997 +

Springer Link is an integrated full-text database for journals and books published by Springer since 1996. It is one of the world’s leading online information services for scientific, technical, and medical books and journals. Kluwer was amalgamated with Springer in the year 2005 and all journals of Kluwer have been accessible through SpringerLink interface. The INFLIBNET has extended the access to the entire collection (1950) of journals and the archival access is provided from 1997 onwards. The prominent peer-reviewed journals with impact factor are:

In sciences:

- Astronomy and astrophysics review
- Glycoconjugate journal
- Cancer and Metastasis reviews
- International Journal of computer vision
- Diabetologia

In social sciences:

- Journal of Economic Growth
- Behaviour Genetics
- Review of accounting Studies
1.9.2.20 Taylor and Francis (http://www.informaworld.com/)\textsuperscript{52}

Subjects covered: Business, Management and Economics; Education, Chemistry and Physics.

No. of Journals: 1076

Accessible from: 1998 +

Taylor and Francis, founded in 1798, is the oldest commercial journals publisher in the world, and one of the leading global academic publishers. Information interface is a new and expanding platform, initially hosting the academic and scientific publications. Taylor & Francis Group publish more than 1600 journals and around 1,800 new books each year. It provides quality information and knowledge that enables the customers and end-users to perform their jobs efficiently, continue their education, and help contribute to the advancement of their chosen profession. It is a widely known publisher among researchers, students, academics and increasingly among professionals. UGC- Infonet Digital Library Consortium can access more than 1173 journals with archival access from 1998 issues onwards.

1.9.2.21 SciFinder Scholar (Chemical Abstract Service (CAS)) http://www.cas.org)\textsuperscript{53}

CAS provides online access to published research in the journal and patents literature–virtually everything relevant to chemistry plus a wealth of information in the life sciences and a wide range of other scientific disciplines
Chapter 1

Introduction

back to the beginning of the 20th century. Since 1907, CAS has indexed and summarized chemistry-related articles from more than 40,000 scientific journals, in addition to patents, conference proceedings and other documents pertinent to chemistry, life sciences and many other fields. In total, abstracts for more than 23 million documents are accessible online through CAS. SciFinder and SciFinder Scholar desktop research tools can be used to explore and search the CAS. Substance identification is a special strength of CAS. SciFinder Scholar is a desktop research tool that provides campus-wide access to the world’s largest and most comprehensive databases of chemistry, biotechnology, engineering, life sciences and related sciences from the CAS.

1.9.2.22 MathSciNet (http://www.ams.org/mathscinet/)54

The electronic version of Mathematical Abstracts is the most important component of MathSciNet. Mathematical Reviews is a reviewing journal of international mathematics literature. The MathSciNet contains signed reviews and bibliographic data from the first issue in January 1940 to the present. Journals, conference proceedings and books of mathematical research are also covered. Items listed in the annual indexes of Mathematical Reviews, but not given an individual review, are also included.

MathSciNet contains over 2 million items and over 700,000 direct links to original articles. Over 80,000 new items are added each year, most of them classified according to the Mathematics Subject Classification. Reference lists are collected and matched internally from over 300 journals, and citation data for journals, authors, articles and reviews are provided. This web of citations allows users to track the history and influence of research publications in the mathematical sciences.
JCCC is Gateway portal for article level searching for consortium-subscribed journals as well as journals which are bring subscribed by consortium members. INFLIBNET has initiated document delivery for the users who do not have access to desired documents which is available at various universities; the centre has identified 20 major libraries as ILL/document delivery centre. It fulfils requests for ILL received from member libraries (from Consortium Journals), sends requested article(s) to the Librarian of the user(s) of requesting university, keeps record of all transactions (for all universities) and monitors delivery. It also appoints a courier service to pickup and delivers articles from ILL Centres and delivers it to librarians of the requesting university (at a stage when transactions are high enough).

Major Benefits

- Universities could overcome Serials crisis
- Could ensure the subscription to high impact-factor journals
- Could ensure economy
- Indexed and abstracted: Makes librarian’s job easier
- Less space for keeping journals
- Management of back issue is easy
- User friendly searching mechanism
- Journals won’t get dirty or soiled
- Same journal can be accessed by many at the same time
- Easier reproductions
Westlaw India contains an ever expanding collection of case law that is updated daily. Alongside Indian case law, Westlaw India also includes case law materials from the UK, EU, United States and other Commonwealth jurisdictions. Westlaw India contains over 3,00,000 full-text decisions from 20 High Courts. Coverage starts from 1886 and case head notes are included for a large number of editorially selected judgments. As in the case of the Supreme Court Judgments, every High Court judgment is also supplemented with the publishing house’s unique case analysis documents enabling users to view a judgments' appellate history through seamless linking between High Court and Supreme Court decisions.

ISI Web of Science (http://www.isiknowledge.com)

This is an intelligent research platform that provides access to the world's leading citation databases, including powerful cited reference searching, the Analyze Tool, over 100 years of comprehensive back file and citation data. It has coverage of 23,000 journals, 23 million patents, and 110,000 conference proceedings, 9,000 Web sites, 2 million chemical structures, 100+ years of back files, 87+ million source items and 700 million cited references.
Table 1.3
UGC-INFONET Digital Library
Consortium Resources Rates of Subscription for the Year 2013

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Resources</th>
<th>Consortium Price in Rupees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>American Institute of Physics</td>
<td>2,67,900.00</td>
</tr>
<tr>
<td>2</td>
<td>American Physical Society</td>
<td>1,85,250.00</td>
</tr>
<tr>
<td>3</td>
<td>Annual Reviews (33 titles)</td>
<td>82,350.00</td>
</tr>
<tr>
<td>4</td>
<td>Annual Reviews (37 titles)</td>
<td>84,770.00</td>
</tr>
<tr>
<td>5</td>
<td>Cambridge University Press</td>
<td>1,58,990.00</td>
</tr>
<tr>
<td>6</td>
<td>Emerald (Library Science Collection)</td>
<td>1,32,460.00</td>
</tr>
<tr>
<td>7</td>
<td>Hein Online</td>
<td>1,76,700.00</td>
</tr>
<tr>
<td>8</td>
<td>JSTOR (First Year)*</td>
<td>2,28,000.00</td>
</tr>
<tr>
<td>9</td>
<td>JSTOR (Renewal)</td>
<td>57,000.00</td>
</tr>
<tr>
<td>10</td>
<td>Manupatra</td>
<td>1,14,610.00</td>
</tr>
<tr>
<td>11</td>
<td>Institute of Physics (IOP)</td>
<td>1,22,180.00</td>
</tr>
<tr>
<td>12</td>
<td>MathSciNet^</td>
<td>43,030.00</td>
</tr>
<tr>
<td>13</td>
<td>Nature</td>
<td>1,34,410.00</td>
</tr>
<tr>
<td>14</td>
<td>Oxford University Press</td>
<td>3,03,510.00</td>
</tr>
<tr>
<td>15</td>
<td>Portland Press</td>
<td>32,200.00</td>
</tr>
<tr>
<td>16</td>
<td>Project Euclid (30 titles)</td>
<td>32,030.00</td>
</tr>
<tr>
<td>17</td>
<td>Royal Society of Chemistry</td>
<td>1,47,290.00</td>
</tr>
<tr>
<td>18</td>
<td>SciFinder Scholar (CAS)#</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Taylor and Francis</td>
<td>3,99,190.00</td>
</tr>
<tr>
<td>20</td>
<td>Westlaw India</td>
<td>3,37,010.00</td>
</tr>
<tr>
<td>21</td>
<td>Annual Membership Fee</td>
<td>5,000.00</td>
</tr>
</tbody>
</table>

(Source: http://www.inflibnet.ac.in/econ/eresource.php)\(^8\)

*Includes Archive Capital Fee (ACF) payable only once
#Quote available on request
^Depending on mathematical activity of an institute.
Subscription to most of the e-resources can start from the beginning of any month till Dec. 2013. Send request to the INFLIBNET Centre for invoice on prorated subscription basis for all resources.

1.10 NEED AND SIGNIFICANCE OF THE STUDY

The University Grant commission and the universities annually spend huge amounts for providing the maximum level of relevant and up-to-date electronic information resources and services for the benefit of the academic community in our country through UGC-INFONET Digital Library Consortium. But a big question arises as to whether the user community is utilizing the resources at the disposal of these university libraries to the desired extent. In this context, an attempt is made to study the effective usefulness of the electronic information resources accessed through UGC-INFONET among the academic communities in their respective University libraries in Kerala.

Electronic information resources are considered as an unavoidable source of information for the academic community. Thus, the importance of e-resources is increasing day by day. In this context, the studies regarding the user perceptions and user satisfaction vis-a-vis the sources of electronic information resources and services available in the university libraries are very much important. Various studies have been conducted to understand the information requirements and use patterns of different categories of academic community including teachers, research scholars and students in the electronic environment of libraries. However, no serious studies have been conducted in the university libraries in Kerala regarding consortium based accessibility and the effectiveness of e-resources, particularly, UGC-INFONET Digital Library Consortium, an ambitious programme of the University Grant Commission (UGC).
The main objective of any library is to provide maximum resources to their users at minimum cost within the shortest possible time space. Keeping in view this primary objective, most of the university libraries in Kerala State have provided for availability of the INFONET resources and services to the academic community. Naturally, it is the responsibility of a library to make sure that the user community is making optimum use of the valuable e-resources provided to them. Annually the universities are spending lakhs of rupees for subscribing electronic resources through INFONET. So it is highly essential to make sure that those resources are used efficiently and effectively by the user community.

Thus, this study is of great importance as it aims to understand the usefulness and effectiveness of UGC INFONET which places a vast quantity of electronic information resources and services at the disposal of the academic community in their respective Universities in Kerala.

The users of an academic library being a heterogeneous group, their information needs and the retrieval patterns of information vary from user to user. Use of library resources and services is always commensurate with the needs of the users; hence, the greater the needs the greater the use. Understanding the actual information requirements of the user groups is, therefore, an essential pre-requisite for providing relevant information services in the libraries. So it is necessary to find out as to what extent the academic community utilizes the particular information resources and services provided in the university libraries. In this context, the study will also help the university libraries to strengthen the collection of information and provision of services where inadequacies exist.

Due to the advancement of Information and Communication Technologies, the existing environment in the libraries is changing to digital environment. As such, many libraries are in the process of converting from
print to electronic format, at the same time developing their collection of resources. The collection development policies and procedures for acquiring resources of academic libraries have also been subjected to changes in order to keep pace with the electronic versions. But most of the libraries, faced with the shrinking library budgets and financial aids, coupled with the high cost of library materials are not able to meet the twin problem of digitization and meeting increasing information requirements of their users. The escalating price of the rapidly growing numbers of electronic journals and databases has forced the libraries to think of alternative options to subscribe to e-resources. A new approach has, therefore, become necessary. Creation of consortia has, thus, emerged as the only solution to overcome the universal phenomenon of decreasing financial support and increasing user requirements of libraries. The university libraries in Kerala are not exception to this new economic crisis. The UGC-INFONET Digital Library Consortium can fill the gap existing between the actual provision of facilities in the libraries and the expected availability and accessibility of these resources and services by the academic communities using them.

This study is an attempt to analyze the adequacy of electronic information resources and services available in the University libraries in Kerala through UGC-INFONET to cater to the needs of the academic community. The strength and weakness of libraries in this regard is also expected to be examined. This will help the concerned authorities to have a re-look at the upkeep and maintenance of the libraries and expand their scope of resources and activities as demanded by the user communities.

While assessing the e-resources available and accessible from UGC-INFONET, this study also aims to understand variety of problems being faced by the academic communities. Measures for improvement and improvisations will thus be facilitated. In addition, the study also observes the need for user
orientation programmes after locating the areas of weaknesses, failures and shortcomings. Such assistance and training will be a great help to the user community to make optimum use of the e-journals and e-resources from the UGC-INFONET.

1.11 STATEMENT OF THE PROBLEM

The problem of the present study is entitled the ‘Use and Effectiveness of UGC-INFONET in promotion of Education and Research among Universities in Kerala: A Study.’

1.12 OPERATIONAL DEFINITION OF KEY TERMS

The key terms of the problem are:

1. Use

2. Effectiveness

3. UGC-INFONET

4. Promotion

5. Education

6. Research

7. University

8. Kerala

9. Study
Chapter 1  

Introduction

1.12.1 Use

Oxford Advanced Learner’s Dictionary of Current English\(^9\) gives the meaning of use as ‘using or being used; condition of being used; employ for a purpose. ‘In this study ‘use’ means, the usefulness of different types of electronic information resources available through UGC-INFONET to the academic community for their various academic purposes.

1.12.2 Effectiveness

As per Collins English Dictionary\(^6\), the meaning of effectiveness is ‘the degree to which something is successful in producing a desired result; success’; making a striking impression. Synonyms: success, successfulness, efficacy, productiveness, fruitfulness, potency, power.

In this study effectiveness means how and to what extent the electronic information resources accessed from the UGC-INFONET can serve the purpose of use by the academic community in the universities in Kerala.

1.12.3 UGC-INFONET

The UGC-INFONET is one of the largest library consortia in India. It was launched in December 2003 by interlinking all the Universities and colleges in the country under the purview of University Grant Commission, to support education and research in India.

In this study, UGC-INFONET Digital Library Consortium is one of the noble ventures executed by the University Grants Commission (UGC) and the Information and Library Network Centre (INFLIBNET). The main objective of this programme is to provide electronic access to scholarly literature in all areas of learning to the higher education sector of the country. This accessibility will increase in a very fundamental way the utility of the
resources available to the Universities for various academic activities, particularly, for teaching learning and research. www. ugc.ac.in

1.12.4. Promotion

Definitions of promotion by the Free On-line Dictionary are ‘the act of promoting’ or the fact of being promoted; advancement; encouragement of the progress; growth or acceptance of something; furtherance.

Here, the meaning of promotion shows how extensively the UGC-INFONET is supporting the academic community in Kerala for the advancement of their various academic endeavours.

1.12.5. Education

Education in its broadest sense is any process by which an individual gains knowledge or insight or develops attitudes and skills. A remarkable observation was made by ‘Kothari Education Commission’ about the purpose of education: “In a democracy the individual is an end in him and the primary purpose of education is to provide him with the widest opportunity to develop his potentialities to the full”.

Here, education means the process of teaching and learning activities in the University level.

1.12.6. Research

In the Encyclopedia of Social sciences, “Research is the manipulation of things, concepts or symbols for the purpose of generalizing and to extend, correct or verify knowledge, whether that knowledge adds in the construction of a theory or in the practice of an art” (Seligman (Ed) 1935).
According to M.H. Gopal, “Research is essentially a systematic enquiry seeking facts through objective, verifiable methods in order to discover the relationship among them and to deduce from them broad principles or laws” (M.H.Gopal 1964).

Here research means the activities associated with advancement of knowledge at University level.

1.12.7. University

Oxford Advanced Learner’s Dictionary of Current English third edn. (1974 p.961) defines University as “an institution for the advancement and dissemination of knowledge, conferring degrees and engaging in an academic research”.

From this study’s point of view, it is an institution of higher learning with the authority to award degree at bachelor, master and doctoral levels and usually is having research facilities.

The quantum growth in the HE sector is spear-headed by the Universities, which are the highest seat of learning. The word, University, is derived from the Latin word ‘Universitas,’ which means ‘specialized associations between students and teachers.’ This Latin word referred to institutions of learning, which granted degrees to its students. The present day Universities are no different from the ancient institutions except for the fact that Universities today are much bigger in terms of both the subjects taught and the students.

In India, ‘University’ means a University established or incorporated by or under a Central Act, a Provincial Act or a State Act and includes any such institution as may, in consultation with the University concerned, be recognised by the University Grants Commission (UGC) in accordance with
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the regulations made in this regard under this Act. Every year, millions of students from within the country and abroad, enter these portals mainly for their post graduate studies while millions leave these portals for the world outside. http://mhrd.gov.in/overview_uni_higher_english

1.12.8. Kerala

Kerala is the southernmost state of India, formed on 1st November 1956. Its area is 38863 Sq. km and has a population of 31 million (Manorama Year Book 2013).

1.12.9. Study

Oxford Advanced and Learner’s Dictionary of Current English gives the meaning of study as ‘give time and attention to learning or discovering something’.

Here study means to find out the use and effectiveness of the resources and services provided through UGC-INFONET Digital Library Consortium among the academic community in the Universities in Kerala.

1.13 OBJECTIVES OF THE STUDY

The primary objective of this study is to analyze the Use and Effectiveness of the UGC-INFONET Digital Library consortium, for the promotion of education and research among the academic communities especially the teachers, research scholars and students in the universities in Kerala. In addition to these, this study aims to measure the Information Communication Technology skills among the academic communities and to study the use pattern of library resources and services available in the University libraries in Kerala. In order to accomplish the above objectives, this study incorporates the following specific objectives.
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1. To study the use pattern of UGC-INFONET by the academic community in the university libraries in Kerala.

2. To understand the user preferences for e-resources offered by INFONET.

3. To study the adequacy of e-resources offered by the INFONET.

4. To study the usefulness of INFONET services offered by INFONET.

5. To measure the effectiveness of the UGC-INFONET resources and services offered through the university libraries in Kerala.

6. To study the infrastructural facilities provided by the University Libraries associated with the INFONET centres.

7. To study the human resources managing the INFONET services in the university libraries.

8. To measure the level of satisfaction regarding the INFONET resources and services offered through the university libraries in Kerala.

9. To identify the factors hindering the effective use of INFONET resources and services in the university libraries in Kerala.

1.1.4 HYPOTHESES

In order to study the above mentioned objectives, the following hypotheses are framed and tested by applying appropriate statistical tools.

1. The e-resources accessed by the academic community through UGC-INFONET are in a high level of usefulness.

2. The information resources and services offered through UGC-INFONET are effective.
3. The e-portals of UGC-INFONET are considered as a good source of electronic information resources and have high importance among the user community.

4. The infrastructural facilities provided for accessing INFONET resources are satisfactory.

5. The academic community is highly satisfied with the resources and services provided through the UGC-INONET.

6. The quality of Human Resources at the disposal of the University libraries in Kerala has a high level of acceptance among the user communities.

1.15 SCOPE AND LIMITATIONS OF THE STUDY

One of the most important components that determine the quality of education and research is the relevant and up-to-date information available to the academic communities for their various academic pursuits. Due to various reasons, no individual library can provide the entire gamut of resources the users expect. To overcome this demanding situation, the University Grant Commission (UGC) constituted the UGC-INFONET Digital Library Consortium under the initiative of INFLIBNET and ERNET. The main aim of this consortium is to provide maximum resources to the academic community for their diversified academic purposes. Thus the UGC-INFONET is considered a boon to the higher education system in India. However, much is left to be known about the approach of the academic community in Kerala with regard to the utilization of UGC-INFONET e- resources available through the university libraries. The present study is an attempt to find out the role of UGC-INFONET for the promotion of education and research and how the academic community approaches the facilities it provides through the respective University libraries in Kerala.
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The Academic communities in the universities should know first about the different sources of information available in their libraries. Such information will help to utilize these resources for their various academic endeavors. In this context, the study made an attempt to find out the use pattern of the academic community in the university libraries in Kerala.

During the last several years, various studies have been initiated to ascertain the level of the use of electronic information resources by the academic community and the preference of e-resources vis-a-vis conventional resources. These studies draw many conclusions about the attitude and preferences of users. A good number of these conclusions are either contradictory or vague. This study, however, places emphasis on the perceptions and attitude of the academic communities who are the core groups to use the UGC - INFONET consortium facilities. Another important aspect of this study is to find out the purposes for which the academic community uses the e-resources provided by the UGC-INFONET and to enquire about the adequacy of information available through this consortium mode.

E-portals are considered as the gate-way of electronic information resources and the UGC-INFONET provides a number of E-Portals of a number of publishers and aggregators (national and international level) in different subject fields. The focus of this study is on how the academic communities rate the importance of the e-portals. Attempt is also made to dwell on some of the most preferred e-portals of the users. In addition, this study tries to shed enough light on the following components such as Usefulness, Effectiveness, Infrastructure facilities, Human resources, Satisfaction and Hindrances experienced by the users of UGC-INFONET. The study intends to identify the components which support the functioning
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of UGC-INFONET consortium and find out the ways in which they influence the consortium facilities for its better utilization by the academic community.

This study was conducted in four prominent universities of Kerala, located in different parts of the state, selected to represent different regions. The scope of the study is, therefore, limited to the four university libraries, though there are more than a dozen universities in the state. The selected universities are the University of Kerala, Thruvanamthapuram; the University of Calicut, Malappuram; Cochin University of Science & Technology, Ernakulam, and Mahatma Gandhi University, Kottayam. They represent different regions, and are popular and famous in many ways. The universities left out do not stand up to the stature of these four universities in respect of student coverage, academic spectra or tradition. Thus the universities covered under study represent a cross-section of the higher education scenario of the entire regions of the state, competent to reveal the trend in Kerala regarding the use of electronic information resources.

This study has been conducted on a sample of 722 respondents who are utilizing the UGC-INFONET facilities offered by their respective university libraries. As it is not feasible to take all the users of the university libraries in Kerala for the study, a representative sample from all strata is taken by ensuring adequate representation. The users of the university libraries mainly consist of teachers, researchers, students, administrative staff and the members of statutory bodies. This study excludes the last two categories, because they do not make frequent use of the library resources.

1.16 ORGANISATION OF THE REPORT

The main body of the report is presented in six chapters. The preliminary part, bibliography and appendices are also given at appropriate places. The main body of the report is organized as detailed below.
Chapter 1 - Introduction

The first chapter constitutes Introduction which contains a brief outline of the problem, an overview of UGC-INFONET Digital Library Consortium which includes the role and activities of INFLIBNET, objectives of UGC-INFONET, initiatives of INFONET, UGC-INFONET 2.0, a brief outline of the resources subscribed by the INFONET, need and significance of the study, statement of the problem, operational definition of key terms, objectives and hypotheses of the study, scope and limitation of the study and organization of the report.

Chapter 2 - Profile of the Universities

The second chapter provides the profile of the universities surveyed for the study.

Chapter 3 - Review of Related Literature

The related studies conducted in India and abroad on different aspects such as, ICT application for accessing e-resources, use of e-resources, library consortia and its features, Effectiveness of UGC-INFONET which are relevant to the study, are presented in the third chapter under the heading Review of Related Literature.

Chapter 4 - Methodology

The fourth chapter is Methodology which describes the variables, tools used for data collection, samples used for the study, sampling techniques and sample size, data collection procedure, consolidation of data and statistical techniques used.
Chapter 5 - Analysis and Discussions

The detailed analysis of the data by using different statistical techniques is presented in the fifth chapter under the heading *Analysis and Discussions*.

Chapter 6 - Findings, Suggestions and Conclusions

The sixth chapter *Findings, suggestions and Conclusions* includes the major findings, tenability of hypotheses, suggestions and suggestions for further research for the improvement of the use of e-resources.
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1.17 REFERENCES


Chapter 1

Introduction


Economic & Political Weekly. (EPW). Retrieved April, 28, 2012 from (http://www.epw.in)


Chapter 1

Introduction


JCCC. (2012). Retrieved February, 18, 2012 from (http://jccc-ugcinfonet.in


Chapter 1

Introduction


Role of INFLIBNET. (2012). Retrieved October, 18, 2012 from http://www.inflibnet.ac.in
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University. (2013). In India, “University” means a University established or incorporated by or under a Central Act, a Provincial Act or a State Act Retrieved August, 22, 2013 from http://mhrd.gov.in/overview_ uni_higher_english 67


Veeranna S. Cholin. (2005). Study of the application of information technology for effective access to resources in Indian university libraries. The international information library review 37, 189-197.
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