UGC-INFONET Digital Library Consortium: Present Services and Future Endeavours

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ABSTRACT

The higher education system in India is very large and complex. India has the third largest higher education system in the world behind China and the United States, comprising more than 471 universities, 22,064 affiliated colleges, and 5.21 lakhs faculty. The UGC-INFONET Digital Library Consortium, launched in 2004, provides differential access to 5,790 journals to 160 universities covered under 12B Act of the UGC. The article describes major activities, operations, and services of UGC-INFONET Digital Library Consortium. It briefly describes resources subscribed, major items of negotiation and terms of license, core member universities and associate members, access management technologies, etc. The article outlines governing structure, committees, participating universities/institutions and their roles. It elaborates on methods used for promotion of e-resources amongst member universities. The article briefly touches upon the economics of the UGC-INFONET Digital Library Consortium and outlines model for implementation of college consortium. Lastly, the article elaborates on future endeavours of the UGC-INFONET Digital Library Consortium.

Keywords: Library consortium, UGC-INFONET digital library consortium, cost recovery, e-resources

1. INTRODUCTION

The higher education system in India is large and complex. India has the third largest higher education system in the world behind China and the United States comprising more than 471 universities, 22,064 affiliated colleges, and 5.21 lakh faculty. In the academic year 2008-2009, the total number of students enrolled for the formal system of education in university colleges and colleges, was 123.77 lakh including 15.89 lakh for universities and 107.88 lakh for affiliated colleges[1]. However, all educational institutions in India, especially the universities, face acute shortage of funds to subscribe to international scholarly journals. It is estimated that a typical university in India subscribes to 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 50,000 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[2]. Many smaller colleges and institutions subscribed to fewer than hundred journals. Most colleges, including those imparting postgraduate and doctoral programmes, do not have financial resources to subscribe

to international journals, their subscription list includes few Indian journals and a few popular magazines.

However, the accessibility to international journals in Indian universities and technical institutions has improved many-fold with setting-up of a few Government-funded library consortia. Prior to setting-up of these consortia, the access to e-journals was restricted to a few premier institutions like IISc, IITs, IIMs and a few central universities who were subscribing to a few e-resources including bibliographic databases on CD ROM, a few e-journals accessible free with subscription to their print versions and a negligible fraction of journals on subscription. After launch of the Indian National Digital Library in Engineering Sciences and Technology (INDEST-AICTE) Consortium in 2003 and UGC-INFONET Digital Library Consortium in 2004, availability and accessibility of e-resources increased phenomenally in centrally-funded technical institutions (IITs, IISc, IIMs, IIITs, etc.) and universities, setting in a new culture of electronic access and browsing in educational institutions. Besides, INDEST-AICTE Consortium and UGC-INFONET Digital Library Consortium, a number of library consortia have emerged in India in the past five to six years, including CSIR E-journals Consortium, DAE

Consortium, MCIT Library Consortium, FORSA Consortium, IIM Consortium, CeRA (Consortium of e-Resources in Agriculture), RGUHS-HELINET Consortium, DRDO E-Consortium, DeLCON, and ERMED Consortia. The article describes major activities, operations and services of UGC-INFONET Digital Library Consortium. It briefly describes resources subscribed, major items of negotiation and terms of license, core member universities and associate members, access management technologies, etc. The article outlines governing structure, committees, participating universities/institutions and their roles. It elaborates on methods used for promotion of e-resources amongst member universities. The article briefly touches upon the economics of the UGC-INFONET Digital Library Consortium and outlines model for implementation of college consortium. Lastly, article elaborates on future endeavours of the UGC-INFONET Digital Library Consortium.

2. OVERVIEW OF UGC-INFONET DIGITAL LIBRARY CONSORTIUM

The UGC-INFONET Digital Library Consortium, one of the largest consortium in India, was launched in December 2003 by Dr APJ Abdul Kalam, the then President of India to support education and research in universities. The Consortium provides current as well as archival access to 5,790 peer-reviewed journals and 10 bibliographic databases from 23 publishers and aggregators in different disciplines to academic community in universities comprising faculty, staff, researchers and students. These e-resources cover almost all subject disciplines including arts, humanities, social sciences, physical sciences, chemical sciences, life sciences, computer sciences, mathematics, statistics, etc. Besides, other subject areas like law, management, education, etc., are also proposed to be added in the near future. The Consortium subscribes to the entire collection (or bundle) of e-journals from most of the publishers included in the Consortium except for three publishers wherein the subscription is restricted to Cell Press and Current Opinion journals in the case of Elsevier's Science Direct, Library Science Collection in the case of Emerald, and Blackwell Journals in case of Wiley InterScience. Differential access to these resources is offered to 160 member universities based on their needs and activity profile as per the recommendation of the National Steering Committee. The Consortium is also planning to subscribe to Web of Science for its member universities.

3. ACCESSIBILITY OF RESOURCES SUBSCRIBED UNDER THE UGC-INFONET DIGITAL LIBRARY CONSORTIUM

The Consortium subscribes to 18 full-text e-resources and 10 bibliographic databases from academic societies, university presses, commercial publishers and aggregators. While all full-text resources subscribed by the Consortium contain electronic journals, bibliographic databases contain abstracts of articles published in journals, conference proceedings or chapters in books along with links to the full-text e-resources. Details of resources subscribed and accessible to the universities under the UGC-INFONET Digital Library Consortium are given in Table 1. Phase I in the last columns stands for first 50 universities that were given the benefit of access to e-resources in 2004, Phase II stands for next 50 universities that were included in the Consortium in 2005. Remaining universities were included subsequently in 2006-2007.

Access to electronic resources is IP-enabled for the member universities. Users in member universities do not require "Login ID and Password" to access resources accessible to their universities, instead, the resources are accessible to them from anywhere on their Campus network. Currently, the Consortium is working on Shibboleth-based access management technology with an aim to provide off-campus access to e-resources to day-scholars as well as to faculty from their homes or when they are travelling.

4. SUBJECT-WISE DISTRIBUTION OF JOURNALS OFFERED BY THE CONSORTIUM

The UGC-INFONET Digital Library Consortium covers almost all areas of learning that are pertinent to courses offered by member universities including, Arts and Humanities, Social Sciences, Physical and Chemical Sciences, Life Sciences, Computer Sciences, Mathematics, Statistics, etc. Subject-wise distribution of journals available through the Consortium is given in Table 2.

5. MEMBERSHIP

The UGC-INFONET Digital Library Consortium has the following two types of members:

5.1 Universities Under Purview of UGC

One hundred and eighty five universities including 14 new Central Universities, Inter-University Centres of the UGC, and Deemed Universities under direct purview of UGC, are entitled for getting e-resources through the UGC-INFONET Digital Library Consortium. Of 185 universities, 160 universities that have been given Internet connectivity under the UGC-INFONET Connectivity Programme, are being provided differential access to e-resources as given in Table 1. Remaining 25 universities will be covered in the near future. However, some of these universities are highly specialised dealing with subjects like Urdu, Sanskrit, Hindi, and Law, etc. As such, these

Table 1. Resources subscribed and accessible to member universities

S. No.	Electronic resources	URL	No. of Jls.	No. of Univ.	Phase
		Full-text Resources			
1.	ACS	http://www.pubs.acs.org/	37	100	I & II
2.	AIP	http:// www.scitation.org/	18	100	I & II
3.	APS	http:// www.scitation.org/	10	100	I & II
4.	Annual Reviews	http://arjournals.annualreviews.org/	33	100	I & II
5.	Blackwell	http://www3.interscience.wiley.com/	497	60	I & II
6.	CUP	http://journals.cambridge.org/	224	100	I & II
7.	Cell Press (Elsevier)	http://www.sciencedirect.com/	34	50	I
8.	Emerald – Lib. Sci.	http://iris.emeraldinsight.com/	29	60	I & II
9.	Institute of Physics	http://www.iop.org/EJ/	46	100	I & II
10.	Jstor	http://www.jstor.org/	1401	64	I & II
11.	Nature	http://www.nature.com/	1	50	I & II
12.	OUP	http://www.oxfordjournals.org/	206	75	I & II
13.	Portland Press	http://www.portlandpress.com/	8	50	I
14.	Project Euclid	http://projecteuclid.org/	36	50	I
15.	Project Muse	http://muse.jhu.edu/journals	411	100	I & II
16.	RSC	http://www.rsc.org/	29	100	I & II
17.	SIAM Journals	http://epubs.siam.org/	14	50	I
18.	Springer Link	http://www.springerlink.com/	1389	125	I – III
19.	Taylor & Francis	http://journalsonline.tandf.co.uk/	1365	80	I & II
		Bibliographic Databases			
20.	JCCC	http://jccc-infonet.informindia.co.in/		150	I – III
21.	MathSciNet	http://www.ams.org/mathscinet/		50	I
22.	SciFinderScholar	http://www.cas.org/SCIFINDER/SCHOLAR/index.html		20	I
23.	RCS Abstracts and News Bulletin	http://www.rsc.org/Publishing/		100	I & II

universities do not have much use for e-resources that are being offered through the Consortium.

5.2 Associate Membership Programme

The Consortium launched its "Associate Membership Programme" in 2009 with an aim to enroll private universities and other institutions as members and to extend benefits of access to e-resources at the same rates of subscription that are being offered to the core member universities. The Associate Members are required to pay an annual fee of Rs 5,000 in addition to subscription fee for e-resource that they wish to subscribe. Associate members are free to choose any resource they wish to subscribe. Forty private universities

and other institutions have already joined the Consortium in the first year itself. Several universities and other institutions are willing to join the Consortium in the near future.

6. GOVERNING STRUCTURE: COMMITTEES, PARTICIPATING INSTITUTIONS AND THEIR ROLES

The UGC-INFONET Digital Library Consortium is being operated by the INFLIBNET Centre under the overall guidance of a National Steering Committee constituted by the UGC that guides and steers the activities of the Consortium. The National Steering Committee (NSC) is responsible for taking policy decisions as well as for

Table 2. Subject coverage of the journals

Subjects	Number of journals
Computer Science, Information & General Works	446
Philosophy and Psychology	438
Religion	102
Social Sciences	2045
Language	205
Science	1875
Technology	1252
Arts and Recreation	392
Literature	273
History and Geography	947

execution of the scheme. The Committee takes decision on e-resources to be subscribed from various publishers and their accessibility to beneficiary universities. The NSC comprises members from participating universities (one each from Central, State, and Deemed universities), nominee of Governing Board of INFLIBNET Centre, nominee of university from North Eastern Region, nominee of Inter-university centres, IITs/IISc/Institutions of higher learning and Coordinators of CSIR E-Journals Consortium, and INDEST-AICTE Consortium. Director, INFLIBNET Centre is Ex-officio Convener of the NSC and Chief Coordinator of the Consortium.

Besides NSC, a Negotiation Committee (NC) has also been constituted for negotiating rates of subscription to e-resources with publishers. The NC has two members, each nominated by the Chairman, NSC and Chairman, Governing Board of the INFLIBNET Centre. Coordinators of the CSIR E-Journals Consortium and INDEST-AICTE Consortium are Ex-officio members of the NC. The NC also has representatives from the INFLIBNET's Finance and Store Units. Director, INFLIBNET Centre is Ex-officio Chairman of the NC.

The INFLIBNET Centre acts as a nodal agency for implementation, monitoring, and execution of the entire programme through the committees mentioned above. It coordinates all activities concerned with negotiation, renewal of subscription to e-resources, and attending to subsequent troubleshooting on behalf of the Consortium. The NSC also promotes cooperation amongst member universities and facilitates better terms of references for use and preservation of subscribed electronic resources.

7. LICENSE AGREEMENT AND FAIR USE

Terms and conditions of subscription and access to electronic resources available through the Consortium are governed by license agreements that are signed between the Consortium and publishers by the INFLIBNET Centre on behalf of its member universities. The UGC-INFONET Digital Library Consortium has laid down a number of terms and conditions that the publisher should agree. While the Consortium signs the license agreement prepared by the publisher, care is taken to incorporate terms and conditions mentioned below for as many publishers as possible[3].

- **Simultaneous Users**: There is no limit on number of simultaneous users on any of the resources subscribed by the Consortium. Any number of users can access e-resources including e-journals and bibliographic databases at any given time.

- **Walk-in Users**: Walk-in users who are physically present at the subscribing university should also be allowed to use the resources.

- **Print-independent Subscription**: Subscription to e-resources is print-independent. As such, beneficiary universities are free to drop subscription to print copy of journals accessible to them through the Consortium.

- **Inter-library Loan (ILL)**: Licensee is allowed to fulfill ILL requests from non-authorised users using print copy of article downloaded from the licensor's website.

- **Usage Statistics**: Publisher is required to submit 'COUNTER' compliant usage / statistics on number of downloads (both full-text and abstracts) in a given month, previous month and cumulative for one year.

- **Inclusion of Additional Titles**: The publisher would provide access to new journal titles that are added during the contract period at no additional cost.

- **Electronic Link**: Publisher may provide electronic links to the licensed materials from Licensee's webpage at journal level or at article level and publisher should provide help in doing so.

- **Print Copy of Journal**: Publisher should provide a print copy of each journal (if agreed in license agreement) to the INFLIBNET Centre.

- **Protection on Increase of Price**: The Publisher would provide protection on increase in price of subscribed resources. The increase should not be more than 5 per cent.

- **Perpetual Access and Archival Rights**: In case of termination of the Agreement or on the expiry of the agreement, publisher would extend perpetual access to e-resources for the paid period of subscription along with their backfiles offered during the subscription period. Alternatively, the publisher would provide full-text of e-resources with back volumes (e-

journals/e-databases) for each year on prevalent formats, i.e., CD-ROM/DVD-ROM with the retrieval software for access on the network. In case of change in archival technology, the state-of-the-art archival technology shall be made available by the Licensor to subscribers at no extra cost for archival of full-text data of e-journals to higher version of technology.

✄ **Awareness and Training**: The publisher or its representative would conduct "Users Awareness Programme" on campuses of member universities at no-charge to the universities. The publisher would provide publicity material, brochures, posters and user-support materials in both print as well as on CD forms.

✄ **E-print Archive**: Member universities would be allowed to download bibliographic records, abstracts and full-text articles published by their faculty, researchers, students and staff from publisher's site and import them in to their local database and Institutional Repositories.

✄ **Arbitration**: All disputes arising under the Agreement shall be settled under the rules of the International Arbitration Court by one or more arbitrators in accordance with the said rules. The place of the arbitration shall be in New Delhi (India) and carried out in the English language.

8. ANALYSIS OF USAGE

Most publishers maintain detailed usage statistics compliant to an international standard called "COUNTER" for resources offered by them to the Consortium. The INFLIBNET Centre, as the agency responsible for implementation of Consortium, collects comparative statistics of usage of e-resources by the member universities on regular intervals from publisher's site and makes it accessible to them through INFLIBNET website. A custom-made web interface called e-RAMS (Electronic Resource Access Management System) has especially been designed to provide and deliver statistics of usage to member universities. The publishers also provide User ID and Password to the member universities for accessing the statistics of usage of their resources directly from publisher's website[4].

The comparative usage of various resources through 2005 to 2008 is given below in Fig. 1. The figure reflects consistent increase in usage from 2005 to 2008 for all e-resources. The average increase in usage from 2004 to 2008 is 55.74 per cent.

9. ECONOMICS OF UGC-INFONET DIGITAL LIBRARY CONSORTIUM

The factors that determine economic viability and cost-effectiveness of consortia-based subscription to e-resources are: its membership, intensity of usage, successful migration from print to electronic version (with discontinuation of print) and cost avoidance. These factors are discussed below in detail[5].

9.1 Number of Members

A consortium is more meaningful and effective if it has larger number of member institutions. The collective strength of member institutions of the consortium provides it the power to bargain with the publishers for better rates of subscription and terms of licenses. The
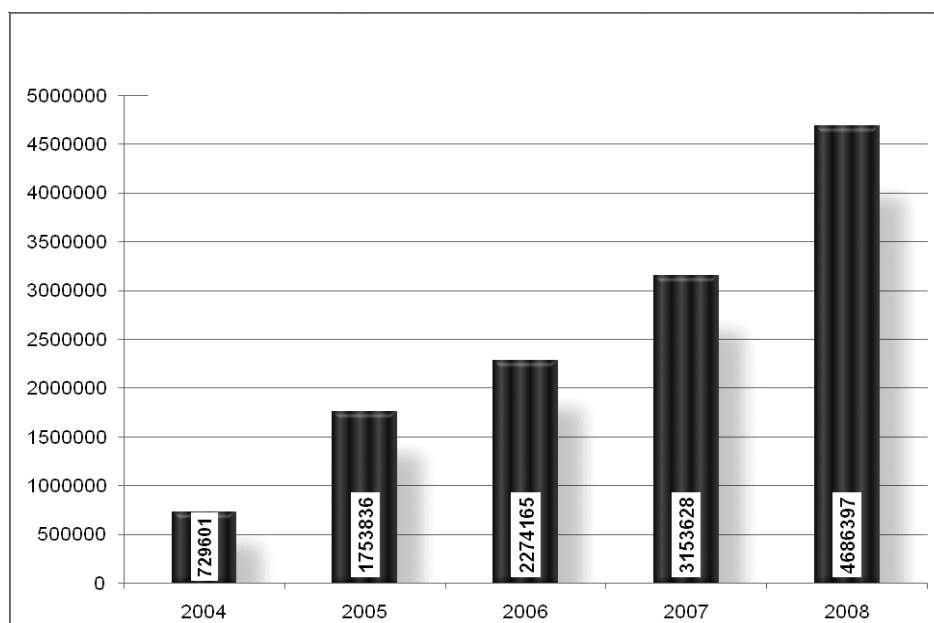

Figure 1. Year-wise increase in downloads of full-text articles by all member universities.

number of member institutions in a consortium is inversely proportionate to the rate of electronic resources.

The member universities to the UGC-INFONET Digital Library Consortium were added in a phased manner. While subscription was paid for only the first 50 universities in Phase I in 2004, additional 100 universities were added in a span of next two years, i.e. 50 universities in 2005 (Phase II) and 50 universities in 2006 (Phase III).

The Consortium currently benefits more than 160 universities. Membership of the Consortium has potential to grow up to 500 including 185 core universities, covered under the 12 B Act of the UGC, and 315 private or deemed universities and other institutions which can join as Associate Members. The Consortium has attracted the best possible price and terms of agreement from the publishers for universities in three different phases (Phase I to Phase III). The rates of subscription to e-resources for most publishers are comparatively higher for first 50 universities covered in Phase I. However, rates of subscription are lower for universities in Phase II and lowest for universities in Phase III.

9.2 Cost Avoidance

The Consortium, with its collective strength of participating universities, has attracted highly discounted rates of subscription coupled with most favourable terms of agreement. In effect, the members of the Consortium avoid the cost commitments on the following:

9.2.1 Lower Rates of Subscription

Publisher offered 50 per cent to 95 per cent lower rates of subscription to the Consortium for member universities. The rates were further lowered as additional number of universities were added to the Consortium. The lower rates of subscription are offered to the Consortium from the vendors not only because of combined strength of its members, but also due to the eagerness of publishers to enter the Indian market.

9.2.2 Annual Increase in Rates of Subscription

In general, there is an annual increase of 10 per cent to 15 per cent of subscription rate of resources. However, Consortium has negotiated the rates of increase in price of the e-resources and fixed the price cap within 4-5 per cent annually. Some of the publishers have offered rates of subscription without annual increase in subscription rates up to 2012.

9.2.3 Average Cost of Journals Subscribed in the Consortium

The Consortium provides differential access to 5,790 journals to 160 member universities at a total cost of

Rs 42.00 crore for 2009. Average cost of single journal computes to Rs. 712.75 after considering the fact that all universities do not get access to all journals.

9.3 Intensity of Usage

Intensity of usage of e-resources can essentially be judged in terms of number of articles downloaded by users of member universities. It can essentially be described in terms of average cost of articles and cost recovered as elaborated below. "Cost Recovery" and "Average Cost of article per download" can be used effectively to judge cost effectiveness of e-resources. These factors reflect the intensity and frequency of usage of e-resources by member institutions in a Consortium.

9.3.1 Average Cost of an Article/Bibliographic Record

The average cost of an article reflects frequency of its usage. It is calculated by dividing subscription cost of a resource by the number of articles downloaded. Figure 2 provides average cost of an article. The average cost per article is lowest for *JSTOR* (Rs 6.16) and highest for Cambridge University Press (Rs 292.66), whereas the Consortium average is Rs 75.95.

9.3.2 Cost Recovery

The cost recovery factor calculated by multiplying number of articles downloaded with the cost of a single article, if it is purchased directly from the publishers in the pay-per-view model or bought from a document delivery service. According to ALPSP survey, 78 per cent of publishers surveyed offer pay-per-view or individual article purchase options. In the pay-per-view model the cost of articles varies from publisher to publisher; average cost is $ 30 per article. Assuming that if the electronic resources were not available through the Consortium, articles downloaded from these resources by the member institutions would have been sourced on ILL/document delivery service at a cost of US $15 per article (average cost of article taken from a study conducted by the American Research Libraries).

The cost recovery factor for each resource is shown in Fig. 3, which reflects that the cost recovery factor for *JSTOR* is highest followed by *Springer*. The total cost that has been recovered amounts to Rs 308.9 crores as against the total expenditure of Rs 40.5 crores in the year 2008 with Rs 268.4 crores as the cost of articles downloaded in excess.

9.4 Cost Savings

The UGC-INFONET Digital Library Consortium, as a policy, has subscribed to print-independent e-resources, which essentially means that member universities are free to drop subscription to journals that are made
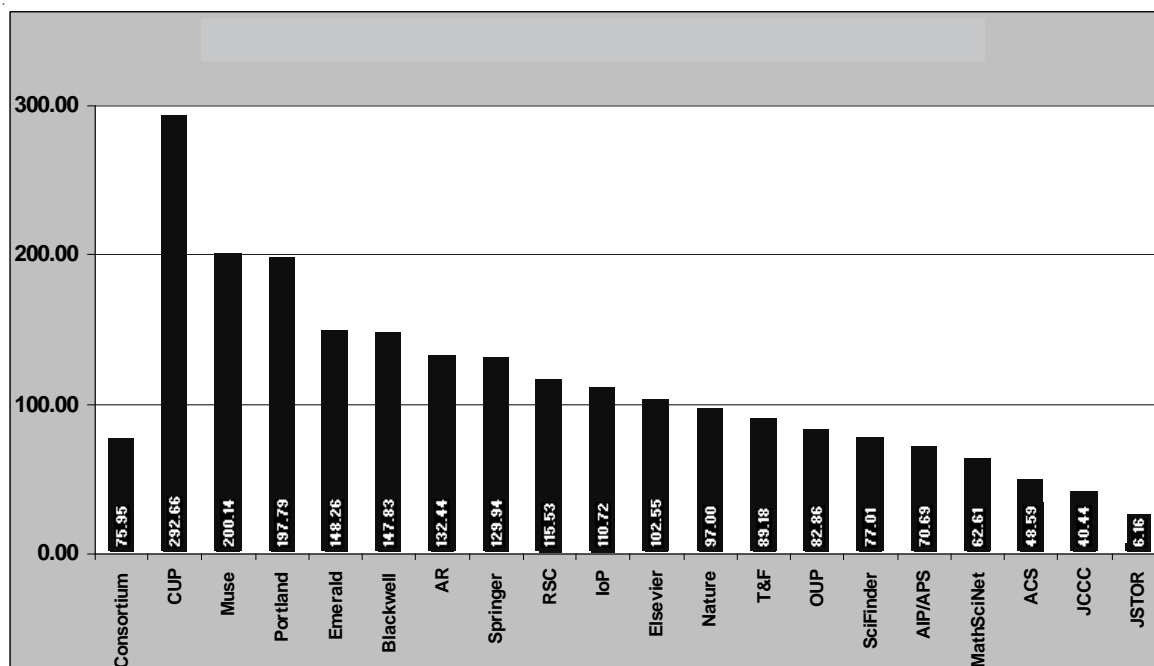
Figure 2. Average cost of an article (in Rs) for consortium during 2008.
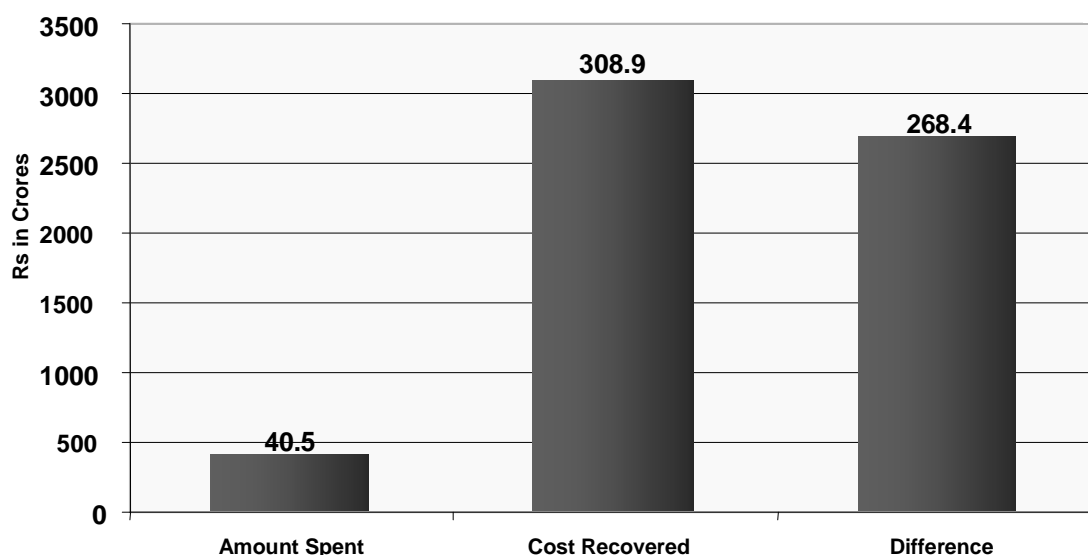

Figure 3. Cost recovery factor for 2008.

accessible to them through the Consortium arrangement. Moreover, beneficiary universities are free to drop print subscription to e-resources for which electronic access is available through the Consortium. The Centre enquired from all the 100 member universities about the droping of the print subscription. Sixty member libraries responded to the request where 31 member libraries have filled the specific question about the discontinuation of the subscription. Accordingly, the figure reaches to around Rs 3.7 crore on account of drop-in print subscription by the universities. It is presumed that the total savings made on this account would be equivalent to the expenditure incurred on subscription to e-resources through the Consortium.

10. EFFECTIVE IMPLEMENTATION STRAT-EGIES ADOPTED BY THE CONSORTIUM

Given the fact that funds required for subscription to electronic resources for all the universties are met by the Government, it is imperative to take steps to ensure optimal utilisation of e-resources in all member universities. Some of the important steps taken in this regard are as follows:

10.1 Internet Connectivity through UGC-INFONET

The decision to provide access to electronic resources to universities was taken by the UGC in the

year 2003. However, it was realised that the Internet connectivity, a pre-requisite for extending access to e-resources, is not available in most of the universities. To implement the programme, INFLIBNET took the initiative by providing connectivity to universities under the project called UGC-INFONET. So far 160 universities have been provided Internet bandwidth ranging from 512 kbps to 2 Mbps. Fourteen more universities covered under 12B Act of UGC has recently been identified for inclusion under the scheme. ERNET India is the Internet Service Provider for the members of UGC-INFONET. The Centre is currently contemplating to provide greater Internet bandwidth to member universities under the UGC-INFONET Programme.

10.2 Comparative Usage Analysis by Member Universities

The INFLIBNET Centre compiles detailed statistics of usage of e-resources by member universities. Each university is ranked based on their usage of e-resources. The rank assigned to universities based on usage of e-resources is often used as a measure of their scholarly performance. Comparative usage statistics of universities covered under scheme is made accessible to the universities. Universities with lower usage are urged to increase their usage.

10.3 Promoting Use of e-Resources

The Consortium needs to take steps to promote usage of subscribed resources amongst the member universities. The UGC-INFONET Digital Library Consortium has taken the following steps to promote use of e-resources[6].

10.3.1 Consortium Website

The INFLIBNET Centre maintains a separate, dedicated website (http://www.inflibnetnet.ac.in/econ/) for the Consortium. The website provides detailed information about the Consortium including (i) search and browse interface for more than 5,000 journals covered under the Consortium; (ii) classified index to journals covered under the Consortium; (iii) search interface for member institutions (universities) and e-resources accessible to each one of them; (iv) E-resources Access Management System (E-RAMS) designed to provide access to usage statistics to member universities and for monitoring their complaints; (v) detailed tutorials on each e-resource; (vi) licensing and fair use of e-resources; (vii) associate membership programmes and information on how to join the Consortium; and (viii) guidelines for the UGC-Infonet Digital Library Consortium.

10.3.2 Users Awareness Training Programmes

Users Awareness Training Programme is a crucial requirement a consortium has to fulfill to facilitate optimum use of subscribed electronic resources. Training programmes act as a bridge to facilitate better communication amongst members of consortium and find answers to common problems. Such programmes are essential both for the users as well as for the library staff would make users competent to conduct their own searches more effectively. The Consortium provides financial assistance to member universities for conducting one or two-day user awareness programme with an aim to increase usage of various e-resources. These programmes help faculty members, research scholars and students to get acquainted with resources, their features, functionalities, and advanced options.

10.3.3 Specialised Publications

The INFLIBNET Centre, as nodal agency to execute the Consortium, prepare, design, print and distribute posters, brochures, and user's manual amongst member universities. Moreover, soft copies of these tutorials are also made available through the Consortium website. The website also provides links to web-based tutorials available for these resources on publisher's website. The Centre has also published a Compendium for member universities that provides detailed guidelines on effective and efficient use of electronic resources. This Compendium contains tutorials on each resource subscribed by the Consortium[7].

10.3.4 Annual Meets: CALIBER and PLANNER

Besides, training programmes, the INFLIBNET Centre organises two major annual conventions every year, namely CALIBER and PLANNER. Both the conferences are used as a platform to discuss and deliberate on various issues related to effective use of e-resources.

10.3.5 Usage Monitoring and Web-based Support for Troubleshooting

The INFLIBNET Centre, as an agency for implementation of the Consortium, has developed E-RAMS (Electronic Access Management System) that (i) helps users to lodge their complaints and offer their comments regarding usage of e-resources; (ii) facilitates publishers to record action taken on the complaint; (iii) view or track status of complaint made by member universities; (iv) facilitate systematic hosting and delivery of statistics of usage of e-resources to member universities; and (v) facilitate users to view IP ranges communicated to the publishers for accessing e-resources.

10.3.6 Copyright and IPR Issues

Several publishers block access to their e-resources in case of excessive and systematic download of articles causing interruption in access to their e-resources. It is,

therefore, imperative that the users as well as librarians are sensitised on issues of licenses and agreements that consortium signs with the publishers. Users need to be told what, as an authorized user, they are allowed and what they are not. While most of the publishers allow ILL, electronic delivery of articles are not allowed. Similarly, while there is no limit on number of articles that can be downloaded from a resource, systematic downloading of articles is not allowed. Issues of copyright and license agreements are addressed in detail on the Consortium website. The issue of copyright and licensing issues are also addressed during the users awareness programme to ensure un-interrupted access to e-resources.

10.3.7 Web 2.0 Technologies for Promotion and Support

RSS Feeds (http://www.inflibnet.ac.in/feed/)

The INFLIBNET Centre has developed and installed RSS Feed Aggregation Service on its website. The Service facilitates RSS links to open on the website of the Centre for all electronic journals that are covered in the Consortium and have option for RSS feeds. Resultantly, the users, instead of copying RSS feeds into their RSS Feed Readers, can visit the INFLIBNET website and read the current contents of desired journals subscribed under the Consortium. These RSS feeds are arranged according to subject categories as well as alphabetically. Moreover, journals covered under the RSS Feed Aggregation Services can also be searched according to the subject category and by words in journal titles.

Library Tool Bars

The INFLIBNET has developed toolbar that facilitates easy access to e-resources and other important links on their website. After getting positive response from users, INFLIBNET has recently launched a new version of Toolbar.

10.4 Facilitating Communication among Member Universities

Continuous communication amongst members of a consortium is considered its life-line. Effective communication motivates members to cooperate, commit to the cause of consortium and align members toward a shared vision. Continuous communication is necessary to link each member with the practices of the consortium and to involve them at policy and operational level as a team. The Consortium promotes communication at the following levels:

10.4.1 Mailing List

The Consortium is required to keep a close liaison with its members. It requires feedback and information from its members regularly and at times urgently. A mailing list with archival facility was made operational at the INFLIBNET Centre to facilitate communication amongst members of the UGC-INFONET Digital Library Consortium. All technical and administrative contacts of each member institutions are members of the E-mailing list (e-consortium@inflibnet.ac.in). The mailing list can be subscribed by any person in a universtiy which is the member of the Consortium. The Consortium maintains a comprehensive website (http://www.inflibnet.ac.in/econ/) that is kept updated regularly.

10.4.2 INFLIBNET Chat

The INFLIBNET Centre has recently developed its own chat-room services using PHP for extending proactive support to the users. The users can log on to www.inflibnet.ac.in/chat or click on "Online chat' at the home page of INFLIBNET's website and enter into a chat session with dedicated and qualified team of professionals for resolving their problems in a real-time mode.

Besides, the INFLIBNET Centre through its annual events, CALIBER and PLANNER, establish contacts with members of the Consortium. Moreover, J-gate Custom Contents for Consortium (JCCC), designed especially for the Consortium, facilitates resource sharing amongst member institution and serves as a media to increase communication amongst members[8].

11. FUTURE ENDEAVOURS

One of the immediate future endevours of the UGC-INFONET Digital Library Consortium, is to launch college model of the Consortium under a joint project entitled "National Library and Information Services Infrastructure for Scholarly Content (N-LIST)" sanctioned to the INFLIBNET Centre and IIT Delhi by the Ministry of Human Resource Development (MHRD) under its National Mission on Education through ICT. The project provides for cross-subscription to e-resources, i.e., subscription to INDEST-AICTE resources for universities and UGC-Infonet resources for technical institutions as well as for subscription to UGC-INFONET e-resources for colleges. The project has been sanctioned and the Ministry has released the requisite funds for the joint project. Under the project, individuals (including students, researchers and faculty) from colleges and other beneficiary institutions would have direct access to e-resources through server(s) installed at the INFLIBNET Centre. The authorised users from colleges would be able to access e-resources and download articles required by them directly from the publisher's website once they are duly authenticated as authorised users using technologies being deployed for this purpose.

The INFLIBNET Centre, Ahmedabad is responsible for developing and deploying appropriate software tools for

authenticating authorised users. Though most publishers of online digital content supports IP filtering and password-based authentication to provide access to their electronic resources, there are several other technologies and protocols that are in vogue for authenticating users to access and operate upon digital materials irrespective of their log-in location. Such technologies include Web proxies, Shibboleth, Referring URL, Kerberos, etc. All such access management technologies are being examined with an aim to adopt authentication technologies that facilitate seamless access to e-resources to colleges that do not have static IP addresses. The Centre would also monitor usage of e-resources with an aim to check misuse or trouble shooting faced by beneficiary colleges.

The INFLIBNET Centre, Ahmedabad is currently evaluating the availability of ICT infrastructure in Govt/Govt-aided colleges. Eligible colleges are being asked to submit list of authorised users including faculty, researchers, and students. Trial access to selected e-resources has already began (for further information on this initiative, visit the project website at http://www.inflibnet.ac.in/n-list/). Colleges eligible for the scheme (12 B/2 F) are invited to register online by filling the Registration Form.

Besides, the Consortium proposes to add more resources, especially in social sciences, education, law, management, etc. Based on the demands from user community in universities, it is proposed to subscribe to additional resources from publishers like Wiley InterScience, Science Direct, Emerald Management Xtra, and Sage Publications. The Consortium plans to strengthen and expand its "Associate Membership Programme" with inclusion of additional e-resources at lower rates of subscription so as to encourage private universities and other institutions to join the Consortium and subscribe to e-resources of their choice on payment basis.

12. CONCLUSION

The UGC, through the INFLIBNET Centre, has successfully infused a new culture of electronic access to scholarly information amongst academic community in universities through two major initiatives namely, "UGC-INFONET Connectivity Programme" that provides for networking of university campuses with state-of-the-art campus wide networks and Internet bandwidth, and the "UGC-Infonet Digital Library Consortium", which provides access to selected scholarly electronic journals and databases in different disciplines.

With launching of N-LIST programme, e-resources accessible to universities only, are now being made accessible to colleges also. These programmes would certainly benefit the higher education system in India

immensely. Providing access to e-resources to the faculty and researchers is not a purpose in itself. It is only a mean to trigger a stronger research and academic culture in the universities and colleges recipient of this benefit. The Consortium efforts should, therefore, lead to increase in productivity of scientific research output both in quality and quantity. It is presumed that access to e-resources would invariably make qualitative difference on research, learning, scholarly and R&D activities of faculty and researchers. Quality of teaching, research and publications of scientists and scholars are impacted with accessibility and availability of print and e-resources. It is presumed that research productivity of scientists and researchers in beneficiary universities would increase with increase in availability and accessibility of qualitative information resources. Similarly high degree of correlation is presumed between ranks of universities arranged in accordance with number of articles downloaded by them and number of articles produced by them. Lastly, Return on Investment (RoI) is also likely to be positive and high.

Ensuring optimal use of electronic resources is one of the biggest concerns for the consortium that receives central funding from the Government. Libraries and information professionals are required to play a proactive role in promoting usage of resources amongst faculty and researchers.

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