

**Information access in developing countries: with special reference to Astronomy libraries
affiliated to scientific institutes in India**

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Introduction: India has a long tradition of astronomical activities. A number of astronomical centres established in the 20th century that seek to observe the universe in various wavelength bands. Astronomy and astrophysics research thus forms an important component in scientific activities in India. In India there are 8 such main astronomical institutes where research in Astronomy and Astrophysics is carried out. These institutes are:-

1. IIA (Indian Institute of Astrophysics, Bangalore)
2. IUCAA (Inter University Centre for Astronomy & Astrophysics, Pune)
3. NCRA (National Centre for Radio Astrophysics, Pune)
4. Nizamiah Observatory, Osmania University, Hyderabad
5. PRL (Physical Research Laboratory, Ahmedabad)
6. RRI (Raman Research Institute, Bangalore)
7. State Observatory, Nainital
7. TIFR (Tata Institute of Fundamental Research, Mumbai)

These centers are distributed geographically and are established and funded by different government sectors such as:-

Department of Atomic Energy
(TIFR, NCRA),

Department of Science & Technology
(IIA, RRI, State Obs.),

Department of Space (PRL),

University Grants Commission (IUCAA, Nizamiah Observatory)

These centers have well established libraries. These libraries joined together and have formed a group informally in 1982 to share resources available in their libraries. This forum is called as **Forum for Resource Sharing in Astronomy (FORSA)**. The main objective of **FORSA** was to share resources available in Astronomy and Astrophysics.

Objective: The objective of the present study is to understand the various facts related to information access issues in developing countries considering INDIA as a developing country.

Scope: The scope was limited to Astronomy libraries under FORSA network in India.

Methodology: A questionnaire was circulated to all these FORSA libraries to find out the general scenario of resources available in these libraries, technology used, journals subscribed (print + online), their expectations from the world publishers, expectations from the developed country library associations and librarians etc.

Analysis: The data was analyzed to find out the details about the current scenario of Information Technology in India, technology available in FORSA libraries, resources available in FORSA libraries, journals subscribed, barriers to access information etc. During my presentation I am going to cover the following points:-

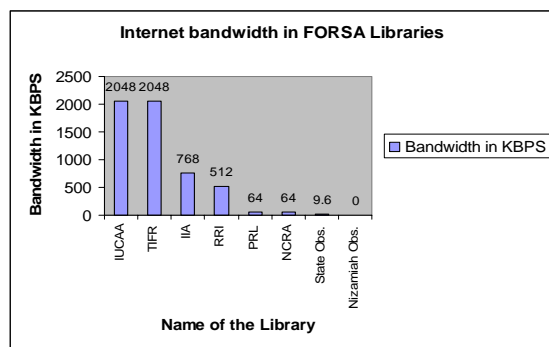
Broad issues related to information access in FORSA Libraries in INDIA:-

1. General Scenario of Internet Technology in INDIA.
2. Internet Technology in FORSA libraries.
3. Computer Technology available in FORSA libraries.
4. Resources available in FORSA libraries.
5. Subscription of journals in FORSA libraries. (Print + Electronic)
6. Barriers to access electronic information in developing countries.
7. Solutions we have made while providing access to information.
8. Help expected from world publishers.
9. Help expected from developed country library associations and librarians.
10. Usefulness of open archives in developing countries.

1. Internet Technology in INDIA:-

The population of India is 1.03 Billion. Literacy rate is 54%. Currently in India out of every 100 persons 3.4 persons have telephone connections. Out of the total population 3.5 million users have access to internet and it is expected that by 2003, 23 million people will have access to internet. International bandwidth available to India is 1 Gbps. In India metropolitan cities have more number of computers and internet connectivity than rural areas.

2. Internet Bandwidth available in FORSA Libraries:-

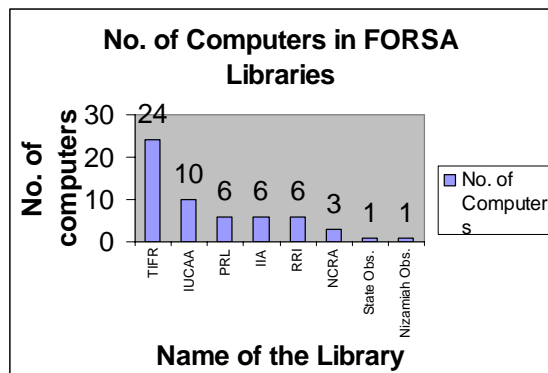


Since all the institutes under FORSA receive grants from different government sectors they have privilege to get enough funds for the advancement of scientific activities. The internet bandwidth available in FORSA libraries ranges from 9.6 KBPS to 2 MPBS.

The graph shows that the Nizamiah Observatory does not have internet connectivity in their library. Nizamiah observatory receives funds from the university. The scenario of libraries which are funded by universities in India is not very good with respect to developing the technology in the library as well as developing the library collection.

From the graph it is also observed that TIFR and IUCAA have high internet bandwidth. It is possible to have high bandwidth in other centres as well but one has to pay high cost to get high bandwidth, which sometimes becomes more expensive for a developing country institution.

3. Computer infrastructure available in FORSA Libraries:-



The no. of computers available in FORSA libraries ranges from 1-24.

The libraries are using either WIN 95/98/NT, UNIX or LINUX operating systems.

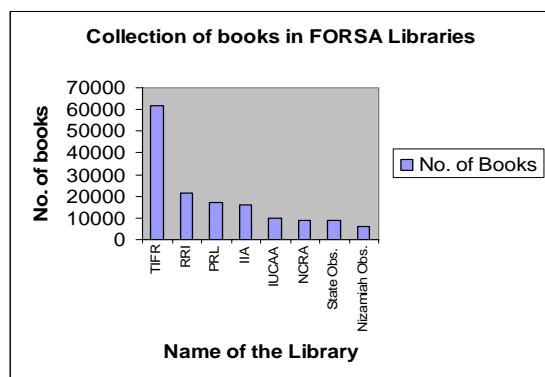
FORSA libraries are using SLIM, LIBSYS and CDS/ISIS integrated library software for all the library house keeping operations. Again Nizamiah Observatory is using CDS/ISIS library software as this software is available free for creating the database of books/journals available in the library.

FORSA libraries have created their web pages and the library staff is responsible for updating the information on the library web pages.

Digital scanners from HP series, CD-servers are available in some of the FORSA libraries. FORSA libraries are also using bar code technology in their libraries.

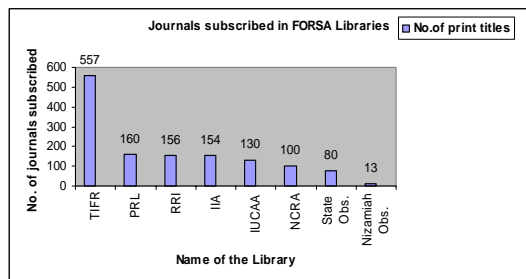
4. Resources available in FORSA libraries :-

Collection of books:-



The collection of book in FORSA libraries ranges from 6161 to 67000. TIFR library has the maximum number of books as TIFR has collection on other subject areas as well. TIFR carries out research in all the physical sciences.

5. Issues related to subscription of journals (print+electronic):-



The above graph shows that journals subscribed in FORSA libraries for the current year. The number of journals subscribed in these libraries ranges from 13 to 557 in **PRINT FORM**.

TIFR is the best academic science library in India but it also receives less than 1000 serials annually including gratis and exchange.

Developing country libraries are giving preferences to purchase online journals where they are **available free** with print subscriptions. Percentage of subscribing **only online journals** is still not implemented in any of the FORSA libraries as well as in other libraries in developing countries.

As a developing country library we are getting discount from University of Chicago Press and World Scientific on journal subscription costs. University of Chicago Press is also giving free online access to their journals with print subscriptions. Developing country libraries will be benefited if these publishers continue to give their support in future also.

FORSA libraries are paying 10% to 12% extra on print subscriptions for ONLINE access to the journals.

FORSA libraries have joined together to give wider access to information resources for their users and save subscription costs. These libraries have formed a consortium for getting online access to the number of journals.

5. Consortia Efforts:-

FORSA member libraries have entered into a consortia agreement with:-

1. Kluwer Publishers: - Five libraries have joined together and have formed a consortium to subscribe to Kluwer titles. All these five libraries are paying 12% extra with the print subscription for getting online access to 12 titles under the consortia. Kluwer publisher do not have a policy to allow a library to join in the consortia subscription if the library is not subscribing to any print title. Each consortia member library has to subscribe to at least 1 or 2 print titles.

2. Springer Verlag: - TIFR formed consortia for the field station libraries of TIFR. All the 481 titles of Springer are available online through LINK consortia subscription to all the field stations of TIFR which are geographically located at different places such as Mumbai, Pune, Ooty, Bangalore, Hyderabad.

3. MathSciNet:- IFR has also entered in to the consortia subscription for MathSciNet.

4. Nature Publishing Group:- FORSA libraries have recently formed a consortium for subscribing “Nature” online. The cost of the electronic subscription is equal to the print subscription.

FORSA libraries are in the process of forming consortia for the following publishers:-

Blackwell Publishing
Elsevier Publisher (ScienceDirect)
IOP Press
Science Citation Index

6. Barriers to access electronic information :-

1. Cost:-Electronic information is not cheap. Cost of the primary sources are increasing every year and hence it becomes difficult for a developing country library to purchase all information which is available in multiple formats. Publishers are charging extra money for online access which most of the universities and research laboratories in developing countries cannot afford.
2. Budget:-The library budgets are in Rupees in India hence it becomes very difficult to buy variety of valuable information resources available in foreign currency.
3. Time:-Delay in getting the information makes it very difficult for the librarians to obtain and provide firsthand and up-to-date information to their users.
4. Lack of access to internet technology:-In India many libraries yet do not have access to internet technology. Hence electronic information cannot be accessed. Speed of internet is yet slow in many places. It takes time to download full text of articles due to low bandwidth. Equal access to internet and information sources is not available in many libraries.
5. Lack of awareness of information:-In developing countries many librarians are even not aware of availability of information. It may be also due to the fact that information is available in multi formats such as CD-ROM's, DVD's, Microfilms, web pages etc. Hence if the related technology is not available it becomes difficult to access the information.
6. Technical barrier:-The technology is getting obsolete day by day. Every time new version of hardware and software are available in the market. If the technology is old information available in that medium cannot be used. As newer technology appears older one ceased to be used.
7. Standardization:-Since the standardization is not used in many libraries it becomes very difficult to exchange information which also causes a barrier to access information.
8. Training:-Library professionals do not get proper training of new technology and technical know-how. Hence new technology cannot be used very effectively which causes barrier to access information.
9. E-commerce is not yet implemented everywhere. We cannot use “Master Card” for online business. Hence we have to wait to get information which is required urgently.

7. Solutions we have made while providing access to the information:-

I. Technological: -

- a. We have developed our library web pages and are constantly adding new information to the web pages.
- b. Our library databases are automated and are available on internet. We have also merged databases of books available in FORSA libraries and it is available on internet.
- c. We are planning to make digital collection. We are trying to install new technology required for this purpose. The FORSA libraries are in the initialization stage of creating digital library of the following sources:-

Annual Reports starting from 1792

Astronomical catalogues published by Indian astronomy observatories (Madras and Kodaikanal Observatories)

Books beyond copyright law

Handwritten Manuscripts

Institutes Publications

Internal Technical Reports

Newspaper clippings

Photographic collection

Trigonometrical Survey of India reports

Slides

Thesis.

- d. **National Virtual Observatory** is coming up in India in Pune as a portal for Indian astronomers. FORSA will take a leading role in developing NVO.

- e. We are providing extended services to our branch libraries by providing e-access to journals.

- f. Fast document delivery services is provided in some of the FORSA libraries through STN/Injenta network.

- g. Some of the FORSA libraries have online access to J-STORE and ScienceDirect.

II. Consortia Efforts: -

We are trying to subscribe more and more journals through consortia subscription to save the subscription costs and provide wider access to the information. We are corresponding with Elsevier, Academic Press, and IOP publishing.

We plan to expand our network by adding more libraries. Three more libraries are ready to join in our network. Institute of Physics, Bhuvaneshwar, ISRO, Bangalore & Harish Chandra Research Institute, Allahabad.

Though FORSA libraries are under different funding agencies all are ready to share information, and knowledge.

III. Library networks available in India:- Currently there are following networks which are at different stages of development in India. They are:-

1. INFLIBNET
2. DELNET
3. ADINET
4. BONET
5. CALIBNET
6. MALIBNET
7. MYLIBNET
8. PUNENET

8. Help expected from world publishers:-

1. The cost of the online publication should be free with print subscriptions or it could be less than print subscriptions.
2. Publishers should subsidize journal subscription rates to individuals and institutions from developing countries.
3. Publishers should provide alternative business models for consortia subscriptions in developing countries so that best affordable alternative can be selected. Consortia subscription cost should not exceed from 8 % to 10%.
4. More interaction and visibility with publishers is expected. We still lack communication with representatives of the various publishers.
5. Publishers should publish more and cheaper local editions for the developing countries.

9. Help expected from developed country library associations and librarians with respect to our professional development :-

1. Visits to developed country libraries through special training program for a short duration will give exposure to a developing country librarian to learn the advancement of technology and advancements in our profession.
2. Enhanced communication and interaction with professional colleagues from developed countries through collaborative projects will be very helpful to the developing country libraries.
3. Opportunities to attend international conferences with funding resources will give knowledge of current trends in the library profession.

10. Open archives:-

Open archives will be very useful to the developing countries as it will reduce the knowledge gap from first world to third world. Knowledge will be shared at one time globally. If, authors, institutes archive their data on their servers it will be available to all instantly.

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