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## DEVELOPMENT OF DIGITAL LIBRARIES IN INDIA: SOCIO-ECONOMIC PROBLEMS AND PROSPECTS

*Praveenkumar Kumbargoudar*

*Mamata Mestri*

*S Parameshwar*

### Abstract

*Due to the information revolution, Digital Libraries are developing all over the world to collect, store and communicate the information through electronic media. Compared to the different developed countries, there is slow development of digital libraries in India. This is so because of many social, political and economical factors. These factors include Growing Population, Illiteracy, Low standard of living, less importance to telecommunication facilities, shortage in supply of Energy Sources, lower number of computer and Internet users. To improve the use of Information Technology applications, the Government of India and different state government already initiated certain policies and projects. The paper also discussed the policies and projects of Central and different State Governments to increase the use of Information Technology applications in administration.*

**Keywords:** Digital Libraries; Social factors; Economic Factors; Information technology Development.

### 1. Introduction

Information and Communication Technology (ICT) has revolutionized the information management activities in the academic libraries during the past few years developing the Information Society. The Information society demands that all the relevant technologies; that are involved in Access to Information, Information collection, information processing, consolidation, repackaging and retrieval be merged so as to evolve an integrated system; capable of providing diversified services.

Advances in Computer Storage and telecommunication methods, online access to databases, electronic journals, electronic knowledge banks, direct document delivery, teletext, teleconferences, bulletin boards, Radio Frequency Identification Systems, Compact discs, Digital Versatile Disks, Networks including Internet, Smart Cards etc. are revolutionary developments in the last two to three decades that have brought a great change in the collection, communication, storage and management of information. As a result, the organization structure and functions of the libraries are changed. The libraries are termed as Conventional Libraries, Digital Libraries and Hybrid Libraries.

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## 2. Digital Libraries

The digital libraries may be defined as the new way of carrying out the functions of libraries, encompassing new type of information resources new approaches to acquisition; new methods of storage and preservations; new approaches to classification and cataloging; intensive use of electronic systems and networks; and dramatic shifts in intellectual, organizational and electronic practice.<sup>1</sup>

Digital library is system providing a community of users with coherent access to a large, organized repository of information and knowledge. The digital library is not just one entity, but multiple sources seamlessly integrated. The digital libraries endow with a structural and planned entrance to information stuffing in a dispersed environment and assist users in searching evaluating and utilizing resources irrespective of their format. Improved information retrieval and enhanced document delivery capabilities are widely acclaimed strength of digital library in a networked environment through internet and internet in library and information center.<sup>2</sup>

The US Association of Research Libraries Identified Five Elements Common to All Definitions of Digital Libraries:

- The digital library is not a single entity;
- The digital library requires technology to link the resources;
- Linkages between digital libraries and information services are transparent;
- Universal access to digital library must be a goal;
- Digital library collections are restricted to document surrogates but include digital artifacts that have no printed equivalent .<sup>3</sup>

To use the digital format, the user population must be literate, preferably computer literates with Internet facilities. Further, there is adequate resources such as Electricity power generation in the country, higher standard of living, proper telecommunication facilities etc.

Today, in developing country like India the numbers of digital libraries are growing. Further, in various academic libraries, conversion and digitization of the collection from print to electronic format is also progressive. But there are many social, economical and political problems, which have become obstacles to the development of the digital libraries in India.

## 3. Socio-Economic Problems

Of Course any of the nations in the world, is not completely free from its own problems like unemployment, Poverty, Illiteracy, Crime etc. In other words, every nation is having its own problems. Similarly, India is also having certain Political, Economical and Social problems. These problems are the hindrance to the development of the digital libraries in India. They are discussed as under:

### 3.1 Growing Population and Illiteracy

India is the second largest country in growing population. Approximately 1/3rd of the population is illiterate and uneducated. The following table shows the population and literacy rate of different Countries in the world.

Table No.1 Table showing Geographical Area, Population and Literacy of the different countries

Sl. No	Country	Geographical Area (Sq.kms)	Population (In Millions)	Literacy Rate (In %)/ Year
1	China	95,96,960	1295	86 (2002)
2	India	32,87,590	1049	65.38 (2001)
3	Germany	3,56,910	82.4	99 (2002)
4	Japan	3,77,835	127.5	99 (2002)
5	Russia	1,70,75,200	144.1	100 (2002)
6	United Kingdom	2,44,820	59.1	99 (2002)
7	United States of America	96,29,091	291	97.9 (1991)

Source: Competition Success Review Year book 2005.

It is noted that the digital libraries are successful only if the complete population of the respective country is literate. In this case, it is observed from the above table that literacy rate is higher in Russia, Japan, Germany, UK, USA AND China. But in India, the literacy rate is still 65.38% and it is a problem for the development of the digital libraries.

### 3.2 Standard of Living and Telecommunication Facilities

Growing population has caused unemployment and poverty in India. Consequently there is a lower standard of living and lower GDP per capita. Due to these factors, there is slow development in telecommunication facilities. The following table shown the GDP Per capita, number of fixed telephone links and Mobile Cellular available for people in different countries.

Table No.2. Table showing GDP Per Capita (\$), Telephone facilities and Cellular Phones in different countries.

Sl.No	Country	GDP Per capita \$	No. of Telephone Connections (In Thousands)	No. of Cellular Phones (In Thousands)
1	China	4700	135000	65000
2	India	2540	27700	2930
3	Germany	24051	53720	60043
4	Japan	31407	60381	56000
5	Russia	8900	35500	17608.8

Source: (i) Competition Success Review Year book 2005. (ii) Career and Competition Monthly Chronicle: India 2005: A Handy Compendium of Statistics

It is noted that India is having lowest GDP per capita and there are lower number of Telephone and Cellular Phone users. For the development of the digital libraries, there is need to develop the standard of living and improve telecommunication facilities for the people.

### 3.3 Demand and Supply of Power

It is noted that the electricity is the basic and main source of power for working of any electrical and electronic equipment. Adequate Production and supply of Electricity helps the population to enable the use of telecommunication facilities and computers. As per the Census of India 2001, of the total 191963935 households in India, only 107209054 (55.84%) households are having electricity and the remaining 84754881 (44.16%) households are powered with alternative energy sources such as Kerosene, solar power and others. Further, the Energy and Power Supply in India in the years 2002-03, 2001-02 and 2000-01 are as under:

Table No. 3. Table showing the Demand and Supply of Power and Energy in India in selected years.

<b>Energy (MU)</b>	<b>2002-03</b>	<b>2001-02</b>	<b>2000-01</b>
Requirement	458777	522537	507216
Availability	417090	483350	467400
Shortage (%)	9.1	7.5	7.8
<b>Power (MW)</b>			
Peak Demand	81492	78441	78037
Peak Demand met	71520	69189	67880
Shortage (%)	12.2	11.8	13.0

Source: *The Penguin India Yearbook 2005*.

From the above data, it is clear that there is shortage in power supply and about half of the households in India are not using Electric power till now. Hence there is need to develop power sector in India, for the development of the digital libraries.

### 3.4 Computer and Internet Users

The awareness about the Information Technology, Computers and Internet is essential for the development of digital library. Hence for the development of digital libraries, the majority of the population must be able to use the computers and internet. The following Table shows the statistics about the Computer users in different countries in 2002 and 2005.

Table No.4. Table showing Number of Computer Users in different countries in 2002 and 2005.

<b>Sl.No.</b>	<b>Country</b>	<b>2002 (%)</b>	<b>2005 (%)</b>
1	China	35	35
2	India	6	21
3	Germany	63	67
4	Russia	19	35
5	Canada	75	79
6	United Kingdom	59	76

Source: <http://yaleglobal.yale.edu/display.article?id=7031>

The Internet is popularly used media for communication in digital libraries. Hence, to access digital libraries, the internet usage is also a most important factor. The following table shows the Statistics about the Internet users in different countries in 2002 and 2005.

Table No.5. Table showing Number of Internet Users in different countries in 2002 and 2005.

Sl.No.	Country	2002 (%)	2005 (%)
1	China	35	35
1	China	24	33
2	India	3	14
3	Germany	47	60
4	Russia	7	15
5	Canada	68	71
6	United Kingdom	47	71
7	United States of America	64	70

Source: <http://yaleglobal.yale.edu/display.article?id=7031>

It is noted from the above table that only 21% of the population know about the Computers and only 14 % of the population use Internet in India. For operating and accessing digital libraries, the majority of the population must be able to use computers and able to search Internet. When compared to other countries, the majority of Indian population is unaware of these technologies. Hence it is a major obstacle for the development of digital libraries in India.

### 3.5 Status of Library and Professionals

It is noted that when compared to developed countries, the development of the Libraries is slow in India. Even after 60 years of Independence, many of the State Governments have not enacted Public Library Legislations so as to provide public library facilities to common public. In many colleges, the Library professionals are still considered non-teaching and supporting staff. A few academic libraries are managed by non-library professionals. Even though Dr. Ranganathan, emphasized Open Access system for the libraries, many academic libraries are working with closed access system for their collection.

## 4. Prospects and Developments

The Government of India, Union Territories and State Governments already, formulated and executed various plans and policies to curb the growth rate of population, Literacy programmes, increase in standard of living, to achieve full employment, developing Agriculture and industrial sector, Improvement in Power Production and Supply, to increase the exports, etc., due to such efforts, India is developing in all respects.

Even though many of social, political and economic problems proved to be obstacles and problems for the development of the digital libraries in India, the Government of India and different state governments initiated Information Technology projects to develop the application of Information

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Technology in administration and planned to educate the people. Of course, it is not possible to discuss all the measures and policies undertaken by the Government of India for encouraging use of ICT and web in India. Following are a few policies of the Government of India and developmental trends in promoting use and development of the Information and Communication Technology, electronic media and Information Sector. The policies and trends undertaken by the various state governments and Union Territories are discussed in an Appendix.

The Prime Minister of India constituted a National Task Force on Information Technology and Software Development in May 1998 with the purpose of formulating a long term National IT Policy to convert India into an IT software superpower. As it is not possible to mention all the developments, the developments stated in the following paragraphs are the only a few achievements made in different departments and sections of the Central Government:

- A Land Information System has already started using Geographic Information System (GIS) and remote sensing to help the farmers to plan their activities and facilitate decision making and planning at the local level. Government is also planned for a System known as "Agriculture Online" for the exchange of Ideas and Information between farmers, Agricultural Scientists, traders and exporters.
- The higher education institutions consisting of 310 Universities and academic institutions 16,000 affiliated colleges were networked with the help of INFLIBNET, an Inter-University Centre of UGC. In 28th December 2003, UGC-INFONET Electronic Journal Consortia was started by INFLIBNET and at present it is providing 4000+ Research Journals to 100+ Universities in India Online. The INFLIBNET is conducting regular training programmes in different applications of ICT to the information professionals. Now a days, every Indian University is using internet for its activities such as Admissions, Exams, Results etc.
- Postal Department got computerized and several new services based on Internet were introduced. E-Post is a new service available at 204 Post Offices at present in a few states – Andhra Pradesh, Gujarat, Goa, Kerala, and Maharastra to cater the postal service to the persons who do not have a PC or internet facilities. E-Bill post is a multipurpose web based facility for paying telephone bills, mobile phone bills, Electricity bills etc, online. Speed Net is another internet based tracking and tracing service for the customer at Speed Post Counters. The computerization and VSAT connectivity for the postal service is under progress.
- India has the fifth largest telecom network in the world comprising of 61.09 million telephone connections (basic and mobile) and over 1.48 million public call offices. There are over 16 million cellular subscribers in the country, growing at the rate of about 1 million per month. The number of digital electronic exchanges was around 300 increased to 36,772 in July 2003.
- The software and IT industry has grown significantly during 2003-04 by emerging as one of the fastest growing sectors with a growth rate of over 30.5% and an export value of US\$12.5 billion. According to the National Association of Software and Services Companies (NASSCOM) estimate in 2002-03, the total revenue from the India IT market was Rs. 317 billion against Rs. 291 billion in 2001-02. The Indian IT and electronics industry recorded a production of Rs. 80,884 Crore during 2001-02 as compared to Rs. 68,450 Crore during 2000-01 showing a growth of 18 percent. Software export alone has jumped by approximately 10 percent to Rs. 36,500 crores during 2001-02 from Rs. 3,700 Crore during 1996-97 with a compound annual growth of about 60 percent.

- The Government of India computerized different departments under E-Governance programme. The departments are Customs and Excise department, Banks, Railways, Air Transport, Income Tax, and Telecommunications etc. so as to facilitate Online Transactions. Similarly the Electronic Voting Machines were introduced in Elections.
- Government also taken up development programmes in Mass Media, such as Television, Radio, Newspapers and Magazines. Electronic Media developed in such a way that the actual situations at various polling booths in Lok Sabha Elections 2004 were telecasted live through Video-Conferencing. Many of the News Channels in Television using Video Conferencing for Live Telecast of the News and Other events.
- The Collections of many of the Academic Libraries and Special Libraries were digitized already and can be accessible through the networks. Several Information Systems and Networks are developed connecting libraries. NISSAT developed several Metropolitan Area Networks such as ADINET, BONET, CALIBNET, DELNET, etc. The Other networks are INFLIBNET, ERNET, SIRNET, etc. Through networking of the Libraries, many libraries are sharing their resources online.
- On September 20, 2004 Geo-Synchronous Satellite Launch Vehicle (GSLV) is launched from Sriharikota and put EDUSAT, the educational Satellite. The EDUSAT is set to bring about revolutionary changes in distance education, converting homes into virtual classrooms. Through EDUSAT, a teacher from a television studio can simultaneously address hundreds of students in different schools and colleges in the various parts of the country if the educational institutions have a terminal to receive the programme. The EDUSAT has 12 transponders, which are capable of generating regional beams covering different parts of India. It is estimated that programmes from EDUSAT can reach 1,000 class rooms and 50,000 students.
- According to Essential Science Indicators (ESI) during 1997-2001, India produced 76,970 papers as against 1, 14,894 by China. The Number of Scientific papers is just one measure of state of research in the country.
- India has joined a select club of six advanced countries with the Pune-based Centre for Development of Advanced Computing (C-DAC) developing the country's Super computer. C-DAC developed 'Param Padam' a super computer which promises the creation of a seamless computing platform for supercomputing at an affordable price in the international market.
- India also ahead in production and export of the electronic products, as disclosed in the following table:

Table No. 6. Table showing Electronic Exports from India

Sl.No	Items	1999-00	2000-01	2001-02	2002-03
1	Electronic Hardware	1,400	4,788	5,800	5,600
2	Computer Software	17,150	28,350	36,500	47,500
	Total	18,550	33,138	42,300	53,100

Source: Chronicle Year book 2005.

## 5. Conclusion

From the above discussion it is clear that India is developing in all respects. But it is noted that growth of Indian economy is slower compared to other countries. For the all around development,

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the digital library must be able to serve the masses rather than only a few. On the other hand the mass people of India must be able to know and use the digital libraries for their development. Computer education to the masses and application of information and communication technology in all the areas is emphasized in this respect for India. The efforts of the governments also appreciable in this regard. Hence, now it is the phase of Hybrid Libraries for India at least for another 10 years. Because, all the above stated problems must be solved and India have to achieve a 'developed country' status.

In this respect about the development, it is worth to quote the statement of Dr. A.P.J. Abdul Kalam, the President of India, as "it does not make sense to achieve a 'developed' status without a major and continuing upliftment of all Indians who exist today and of the many more millions who would be added in the years to come".

### References

1. Yadav, Rashmi and Arora, RL: Digital Libraries: Applications, Aspirations and Challenges. Library Practices for Effective Management. Proceedings of 47th ILA All India Library Conference. Warangal: 20-23 Dec 2001. P. 609.
2. Mishra, Rabin Narayan: Changing Scenerio of Library Services in Digital Arena. Responding to Users Need in Changing Information Landscapes: So Journal of Libraries from Palm-Leaf to Palm-Top. 49TH ILA All India Library Conference Jhansi: Bundelkhand University, 29 Dec 2003-01 Jan 2004.
3. Sinha, Manojkumar and others: Digital Library Initiatives in India for Open Access: An Overview. Dynamic Interoperable Web Based Information Systems. 4th International Convention CALIBER-2006, Gulbarga: Gulbarga University, 2-4 Feb 2006. P. 150.
4. Abdul Kalam, APJ and Rajan, YS (2002): India 2020: A Vision for the New Millennium. New Delhi: Penguin Books, 2002.
5. Bright, PS, Ed (2005): Competition Refresher Book of the Year 2005. New Delhi: Bright Careers Institute.
6. Chronicle Year book 2005. New Delhi: Chronicle Books.
7. Gulati, Anjali (2004):Use of Information and Communication Technology in Libraries and Information Centres: An Indian Scenerio. The Electronic Library. Vol. 22. No.4. 2004.
8. O'Brien, Derek, Ed (2005): The Penguin India Reference Yearbook 2005. New Delhi: Penguin Book.
9. Rajaram, Kalpana (2005): Spectrum's Handbook of General Studies 2005. New Delhi: Spectrum Books, 2005.
10. Sachdeva, SK, Ed (2005): Competition Success Review Year book 2005. New Delhi: Competition Success Review.
11. Singh, Shashi Prabha (2005): The role of technology in the emergence of the information society in India. The Electronic Library. Vol. 23 No.6. 2005. P. 678-690.
12. Subburaj, VVK, Ed (2005): Sura's Yearbook 2005. Chennai: Sura College of Competition.
13. Tara Chand, Ed (2005): Tata Mc Graw Hill's General Studies 2005. New DelhI: TMH, 2005.



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## Appendix. IT Initiatives by States and Union Territories

### Andhra Pradesh

- APSWAN the network, connecting the state secretariat with 25 centres.
- CARD project, a computerized registration of immovable property transactions.
- Multipurpose household survey project keeps data of all residents and land records.
- Automated services of transport provide issuance of driving licenses, vehicle registration.
- Secretariat knowledge information management system, caters to manage the work flow the secretariat.
- E-seva, with its 28 centres and 270 service counters has brought 30 different services to a single window to pay electricity bill, water bill, house tax, take driving license, apply for passport, etc.

### Chandigarh

- Project telemedicine interconnecting three premier medical institutes, i.e. PG1-Chandigarh, AIIMS-Delhi and SGPG, Lucknow using ISDN for tele-diagnosis, tele-consultation and tele-education.
- Implemented e-governance to provide online facilities in the departments of police, excise and taxation, licensing and registering authority, registration of births and deaths, etc.

### Chhattisgarh

- It is one of the best states in the country in telephone infrastructure facilities connecting all its districts with optical fiber cable.
- It has initiated e-governance project called CHOICE (Chhattisgarh online information for citizen empowerment) to provide various government services under one umbrella.
- CHIPS (Chhattisgarh infotech and biotech promotion society) was set up as a prime mover for IT and biotechnology.

### Gujarat

- Smartcard project: road transport offices of Gujarat have been equipped with state-of-the-art driving license enrolment and issuance centers.
- State-wide WAN to connect various office complexes of the government.

### Haryana

- The IT revolution in Haryana was started in 2000 when the state government announced its IT policy. The main objectives of the policy are – superior and cost effective e-governance; IT education and literacy; private investment in IT industry, infrastructure and services; and employment generation.
- The IT policy of the state provides large number of incentives for the IT industry.
- In Gurgaon, it is developing a Software Technology Park of India (STPI).

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**Himachal Pradesh**

- Lokmitra, an ambitious programme broadly based on the model of Gyandoot (Madhya Pradesh) to bring e-governance to be extended later to all state districts through intranet.
- Developed IT vision 2010 in collaboration with NASSCOM to convert the state in an IT destination.

**Karnataka**

- Digitization of the common entrance test (CET) seats allotment in professional courses.
- Computerization of the SSLC and PUC exam process and making results available online.
- Establishment of LAN in the Revenue Secretariat.
- Computerization of payments and receipts in 20/31 districts and 184 sub-treasuries.
- Network center to handle central database at Bangalore and disaster recovery center at Dharwad.
- Computerization of payment of taxes, filing of returns, dealers registration, vigilance and intelligence activities.
- Computerization of the Public Works Finance Cell and the zilla panchayat units for monitoring monthly grants and releases.
- Computerization RTO (on pilot basis) and all police stations. Yuva.com, an IT scheme for rural youth employment.
- Bhoomi, a computerized project launched to maintain land records. It has made land registration simple and easy for the citizens.
- Computerization of insurance department and municipal corporation is in progress.

**Kerala**

- Kerala RD Net networks 152 office blocks and provides regular updates of various state activities.
- CARD: automatic registration system.
- FRIENDS (fast, reliable, instant, efficient, network for disbursement of services), a convenient one-stop gateway to pay variety of taxes and bills, etc.
- Treasury computerization: the project involves the computerization of all district treasury offices and a few key sub-treasury offices.
- Water authority project involves the computerization of all operations of its 13 offices, including billing and collection.
- ISDN-based messaging system for administration.
- Computerization of the department of civil supplies, responsible for issue of ration cards.
- Computerization of the public service commission to conduct examinations like the state eligibility test, medical and engineering entrance and SSC examinations.

**Madhya Pradesh**

- Launched on 1 January 2000, the Gyandoot project covering 20 village information kiosks that offer services like current rates of agricultural produce, copies of land records, online registration of application and public grievance redresses, village auctions, etc. These services are offered at nominal rates ranging from Rs. 5 to 25.

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**Maharashtra**

- Maharashtra VSAT network connects Mantralaya with all the districts in the state which supports video-conferencing and e-mail.
- Sarita, a computerization project of the stamps and registration department. Computerization of the employment exchanges to network all the exchanges.
- Warna wired village project, a web-based information system on the agriculture produce market, agriculture schemes and crop technology, employment and self-employment schemes, educational and vocational guidance, availability of land records and milk procurement, etc.

**North Eastern States**

- Community information centers – (CICs) have been set up in 2002 in all the 487 blocks of the eight N-E states viz. Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. Basic CIC services include internet access, e-mail, printing, data entry and word processing and training for locals.

**Rajasthan**

- Raj-swift, a statewide intranet to facilitate data, text and e-mail between the district offices.
- Rajnidhi information kiosk project proposed to function as a modern service delivery system.
- Networking of secretariat to monitor various key activities of the state.
- Vikas darpan, a GIS-based planning and decision support system.

**Uttar Pradesh**

- E-governance, computerized the election processes, and placed tender documents online.
- Computerization of treasury.
- Digitization of laws, rules, regulations and ordinances issued by the government and make them available online.

**West Bengal**

- A pilot web and kiosk-based education information system to standardize operations and processes.
- Vernacular interface project to provide information about tax payments, public utility bills, etc.