ORIGINAL ARTICLE

DEVELOPMENT OF VIRTUAL LIBRARIES IN INDIA: PROBLEMS AND PROSPECTS

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Abstract:

The paper explained about the development of the Virtual libraries. The developed countries all over the world are developing virtual libraries faster. Compared to the different countries, there is slow development in Information and Communication Technology applications in India. This is so because of many of the 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. These problems become obstacle for the development of the Virtual libraries in India causing a Digital Divide. To improve the use of Information Technology applications and to fill the Digital Divide gap, 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:

Information Technology, digital Libraries, India, Social factors, Economic Factors, Information and Communication Technology Development, Economical factors.

INTRODUCTION :

The developments in Information and Communication Technology applications transformed the Libraries into Electronic Library, Digital Library, Hybrid Library and Virtual Library. Depending on the level of ICT applications in the libraries these libraries were classified. Virtual Reality technology transformed the libraries into Virtual Libraries.

Sangam and Kulkarni1 stated that the terms Virtual Library, Electronic Library and Digital Library are used synonymously. But there is difference between these terms as under:

Electronic Library is a library that has wide spread use of computers and such other activities as online databases and automated record keeping and computer based decision making. Digital Libraries are libraries in which all information exists in digital format. The information itself may however reside on different storage media such as electronic memory magnetic or optical disks, but user will not necessarily perceive any difference between them. Virtual Libraries use the technologies of Virtual Reality (VR). This is known as telepresence in its simplest form. In a Virtual environment, one would be able to browse without having to physically go to it. Using Virtual Reality equipment and facilities one would be able to enter virtual library, browse around its rooms and shelves, use index or catalogue, select a book (by pointing to it and touching it).

Virtual Reality is an oxymoron, where Virtual means the existing or resulting in essence or effect though not in actual fact, form or name and Reality means the quality or state being actual or true. i.e. both

these are self-contradictory words. The term Virtual Reality refers to an environment or object simulated by computer hardware and software in such a way that the viewer experience the environment or object as though it were real.

The virtual library exists independently of the amount or nature of the electronic information to which it provides access. There are no limits on the size, content or value of data in a virtual library. Its definition is shaped by individual or organizational need2.
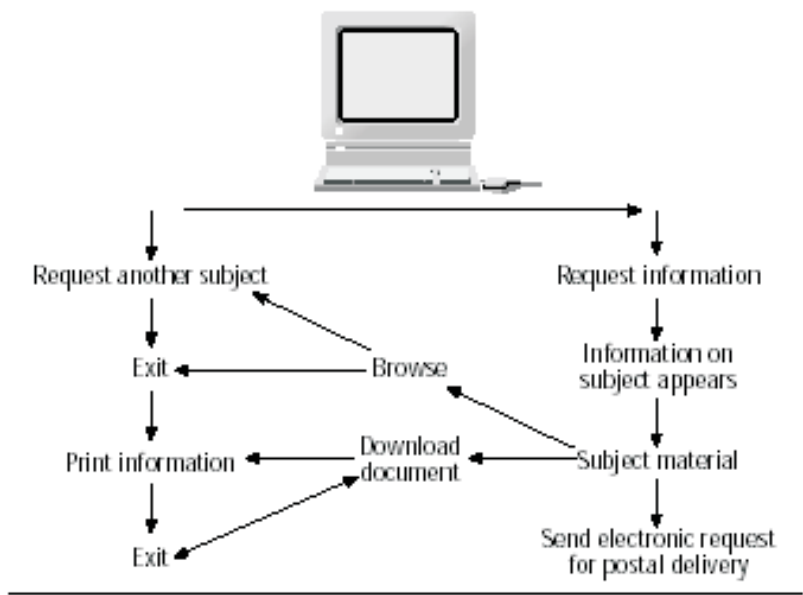
LIBRARIES AND VIRTUAL TECHNOLOGY:

A number of different definitions have been developed in recent literature, a result of which is the need to distinguish between3:

· The library as we know it, which enables users to search for needed information from sources worldwide; to browse and retrieve selected information and request help at any point in the process.

· The library without walls- the virtual library, which facilitates these tasks instantly from users' own network-connected computers, any time, any where and The virtual reality library.

Virtual library may be defined as "a library with little or no physical collection of books, periodicals, reading space or support staff, but one that disseminates selective information directly to distributed library, usually electronically"4.

Virtual library is a library without walls, spread across the globe from where one is able to retrieve the whole world of information through a properly networked workstation. Here the user gets impression as if he is moving through a large library though library does not physically exist, yet the user is able to retrieve the information needed by him5.

Figure 1 The library without walls

Of course, every developed country transforming their libraries into Virtual Libraries. To use the Virtual library, the user population must be literate, preferably well knowledge with the Web and Virtual Reality Technology. Further, there are adequate resources such as Electricity power generation in the country, higher standard of living, proper telecommunication facilities etc.   Due to the developments in ICT applications and the nature and problems of the people in India, there is threat of digital divide, which became major obstacle for developing the Virtual Libraries in India. The different problems are discussed as under:

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 like-wise; India is also having certain problems. These problems are the hindrance to the development of the digital libraries in India. They are discussed as under:

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 %age)/ Year
1	China	95,96,960	1295.0	86 (2002)
2	India	32,87,590	1049.0	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	291.0	97.9 (1991)

Source: Competition Success Review Year book 2005.

It is noted that the virtual libraries become reality, 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 virtual libraries.

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 showed 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
6	United Kingdom	26150	34878	43500
7	United States of America	36300	194000	127000

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 virtual libraries, there is need to develop the standard of living and improve telecommunication facilities for the people.

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.

Energy (MU)	2002-03	2001-02	2000-01
Requirement	458777	522537	507216
Availability	417090	483350	467400
Shortage (%)	9.1	7.5	7.8
Power (MW)			
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 virtual libraries.

4.Computer, Internet and Virtual Technology Users:

The awareness about the Information Technology, Computers and Internet is essential for the development of Virtual library. Hence for the development of virtual libraries, the majority of the population must be able to use the computers, internet and Virtual Technology. 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.

Sl.No.	Country	2002 (%)	2005 (%)
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
7	United States of America	74	76

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

The Internet is popularly used media for communication in virtual libraries. Hence, to access digital and virtual 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	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 virtual 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 virtual libraries in India.

5.Status of Library and its Professionals:

It is noted that when compared to developed countries, the development of the Libraries is slow in India.   Even after 59 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.

6.Digital Divide:

The "information and technology gap" or "digital divide", to refer to the gap between those who can effectively use new information and communication tools, such as the internet, and those who cannot. This definition, however, is disappointing, as it is rather too simplistic. It is true that the most dramatic kind of digital divide is the global divide: some countries can use the internet, and others cannot, because of the simple fact that the indispensable technological infrastructure is missing6.

As the digital divide focuses on the higher end of ICTs involving the electronic transfer of information using digital formats which may themselves be replaced by new technologies such as virtual systems within the next decade. It assumes that the benefits of these technologies and access to the world of information that is contained within them is a benefit that no citizen in the twenty-first century should be without, certainly not at least in the developed world.

The digital divide is usually referred to as the "inequality of access to the Internet." The digital divide is the gap between those people and communities who can access and make effective use of information technology and those who cannot. Simply, A common euphemism that describes the haves and have not of the information age, usually urban versus rural communities. The digital divide is the socio-economic/technological difference between communities in their access to computers and the Internet. The term also refers to gaps between groups in their ability to use ICTs (Information and Communications Technologies) effectively, due to differing literacy and technical skills, and the gap in availability of quality, useful digital content. The divide is seen as a national/social/political problem. It became an issue among concerned parties, such as governments, scholars, policy makers, and advocacy groups, in the late1990s7.

Cullen8 stated that 'A number of research and policy papers addressing the issue of the digital divide identify specific groups of people as being especially disadvantaged in their uptake of ICTs. These include people on low incomes, people with few educational qualifications or with low literacy levels, the unemployed, elderly people, people in isolated or rural areas, people with disabilities, sole parents, elderly

people, women and girls. Because they are often already disadvantaged in terms of education, income and wealth status, and also because of their profound cultural different from the dominant Western culture of the developed world, many indigenous people, and some migrant and ethnic minority groups are identified as having a very low uptake of ICTs. In the USA therefore Afro-Americans, Latinos, as well as North American, Indian Nations are identified as needing targeted programmes to increase their participation in the digital economy'. The digital divide is always described in terms of the difference in the number of telephones, internet users or computers per head between rich and poor countries9.

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 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 by Shashi Prabha Singh10.

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, 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 Loksabha Elections 2004 were telecasted live through Video-Conferencing.

·   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.

        Digital Mobile Library Project: The Govt. of India with the collaboration of C-DAC aimed at bringing about one million books of digital library at the doorsteps of common citizens. Internet enabled mobile Digital Library is brought for the use of common citizen for promoting literacy. It makes use of mobile van with satellite connection for connectivity of internet. The van is fitted with printer, scanner and cutter and binding machine for providing bound books to the end users.

·   NGO's Initiatives: According to estimates, around one million NGOs are functioning in India, majority of which are working for the poor and the downtrodden. Some of the NGOs have taken initiative in setting up information disseminating centers in rural areas. A few such schemes include Drishtee Project, Gyandoot Scheme, The Sustainable Access in Rural India (SARI) Network, General Resources and Information Dissemination (GRID) Center, etc.

·   Corporate Initiatives: The motive of increasing market base has prompted several corporate houses to take up projects aimed at setting up information kiosks in rural areas in different parts of the country. In most cases such kiosks provide various information required by the rural people, besides information relating to the products and service offered by the respective corporate houses. Such developments include Amul's Disk Net, Hindustan Lever's i-Shakti, Ogilvy and Mather's Param Project, Parry's India Agriline, ITC group's e-chaupal project etc.

        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.

CONCLUSION:

Change, transformation and development are the essence of human life and society. Major changes occur due to technological developments. With the change in technology, the society is also transforming along the line of the latest technology. The Libraries are not exception to the same. From the above discussion it is clear that India is developing in all respects so as to overcome technological backwardness and digital divide between poor and rich, rural and urban population, illiterate and literates. But it is noted that growth of Indian economy is slower compared to other countries. For the all round development, the digital and virtual 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 virtual and digital technologies 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. To overcome the digital divide still few more efforts such as compulsory computer education, developing awareness of the ICT applications, etc are required to achieve a 'developed country' status.

It is also essential for the working library professionals, library science students and teachers, to know about the latest technology applications such as Virtual reality, so as to design and develop the future virtual libraries. For this purpose, there is also need for the training and manpower development activities from various Universities and professional institutes.

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