

Information access in the Information Age: Challenge and Opportunities

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Pinpoints the use of information from times immemorial. Traces the heralding of the Information Age. Discusses new challenges that have surfaced in the wake of ICT – digital divide, information overload, information anxiety and information literacy. summarises the role of libraries in preICT era as a linking mechanism between information sources and patrons. Identifies areas libraries should address in the new ICT environment. Stresses the need for change in information managements concluding that if this change is delayed both libraries and society are bound to suffer.

Key words: *Information society; library automation; digital divide; information overload; information anxiety, information literacy; Information access; Information Management*

1. Introduction:

What is the Information Age that is much talked about every where, every time in all forums now-a-days? Does the phrase convey that we need information in all spheres of human activity today? What about the past, then? Did people in earlier ages not exploit information? History offers enough evidence that they, no doubt, did. There can be no two opinions that people right from the beginning of modern civilization did generate and exploit information. This is but natural. Human beings have a curiosity. They do not accept anything on the face of it. They question, wonder and then go adventuring into the unknown. This is how the human community has reached the present stage of mastery and advancement. In this process they have been exploiting existing information and producing new information – modified or altogether new. Human civilization has been sustained and has advanced because of the consistent use of information, whatever

its volume or format. We started with meager amount of information that was recorded on to the clay tablets. With the advancement of civilization the volume of information grew and their emerged other formats which finally settled for print on paper after the famous Gutenberg Revolution in mid Fifteenth century. Scholarly communication, like scholarly pursuits, has had humble beginnings. Handwritten manuscripts were there till the Gutenberg Revolution streamlined it with modern book in print on paper format.

However, the Industrial Revolution found the book lacking the speed that was needed for diffusion of information in the new environment. Thus was borne the journal. It was more compact and had the speed that was the requirement then. By the nineteenth century the journal matured into its present shape of publishing papers citing previous related or impacting materials to offer a well-knit framework for scholarly communication. Improvements in communication in the 19th century like telegraphy, telephone, postal delivery, radio etc. all have been in part a response to the need for transferring and processing information. Growth in volume of information and perennial concern for its recording for exploitation, transportation and preservation lend credentials to our belief that information is all pervasive, has always been exploited and has been regarded as a precious resource for progress and prosperity of human life on the planet called earth. The libraries of different hues that have existed from a long past to support and promote access to information and its preservation for posterity too offer ample evidence to the fact that information has always been in use in different

facets of life.

2. Information Age:

What then is new that the phrase Information Age signifies? The arrival of this age was heralded by popular writers on social change like Bell ⁽¹⁾, Toffler ⁽²⁾, Berkeley ⁽³⁾ and others. Bell termed the post-industrial society as Information Society. Toffler wrote of a revolution sweeping the society into an 'info-sphere'. Berkeley described the phenomenon as 'Information Revolution'. Today it is a term for a society in which the creation, distribution and manipulation of information has become the most significant economic and cultural activity. It is different from the Agrarian and Industrial society. The machine tools of the Information Society are computers and telecommunications rather than the lathes or ploughs of those societies. It represents a movement that is transforming our way of life: how we work and do our business; how we offer education and conduct research; how we develop skills and competencies; and how we enjoy life. Nassimbeni identifies various cogent points that characterize the Information Society thus:

- The importance of information and the creation of knowledge;
- The prominence of the role of ICT in the production and dissemination of information;
- The use of information networks for the distribution of information;
- The radical changes in people's lives as a result of increasing integration of ICTs into all spheres of public and private lives; and
- The necessity for citizens to be trained in new skills to allow them benefit from the access to massive expanding store of information.⁽⁴⁾

Thus the Information Society signifies the total realization of all people in all walks of life that progress and prosperity of humans, both as individuals and societal beings, is directly proportional to the quality and quantity of information available and its timely and intelligent exploitation. It represents a new approach to the production, storage, distribution and use of information in the wake of the emergence and development of Information and Communication

Technology (ICT). It also reflects the impact of IT on citizenship, education, culture, business and every facet of life. Geneva World Summit on Information Society held in December 2003 while addressed a broad range of themes concerning the Information Society adopted a Declaration of Principles and Plan of Action. The declaration recognizes the impact of ICT on society succinctly thus:

...Information and Communication Technologies have an immense impact on virtually all aspects of our lives. The rapid progress of these technologies opens completely new opportunities to attain higher levels of development. The capacities of these technologies to reduce many traditional obstacles, especially those of time and distance, for the first time in history makes it possible to use the potential of these technologies for the benefit of millions of people in all corners of the world.⁽⁵⁾

In this new environment possession of information for use has been substituted by access to information. When we say that we live in the information age, we mean that we live in a time when information is very important in all spheres of human activity for the sustenance and promotion of individual and professional life. Today when rapid developments take place and subjects impact one another freely, it is only through liberal access to information that anybody can face these situations with success. Peoples' information needs are generally recognized as Current, Casual, Comprehensive and Catching up. These four Cs of information needs are well recognised by the society from quite some time in the intellectual environment. Keeping current in one's profession is of utmost importance today as new developments take place in all professions almost every few seconds. If one fails to keep current with these developments one is bound to be marginalized. People need information in day to day intellectual pursuits and thus have a casual need for information. As a person embarks upon a new research or project he/she needs all past and present information for a background study. Finally subjects know no subject boundaries now and impact one another freely and fairly. This has brought about what is generally referred to as disciplinary interdependence. This makes it

imperative to catch up with impacting subjects. In nutshell, this revolution stresses free flow of information and its universal availability without any barriers.

3. Challenges:

However, this Information Society is faced with challenges of its own which obstruct free flow of information and its universal access in many ways. These challenges, pinpointed below, are all new, though some have been there in a different garb for the past two centuries.

3.1 Digital Divide:

Production, organization, archiving and transmission of information before the advent of ICT were restricted to print on paper media. This did not require any technological gadgets for the user to access the information. But today when we exploit information available in digital and virtual formats there is need for ICT gadgets without which access to huge information sources is not possible. We need, for example, computers with adequate peripherals and accessories and Internet connectivity to access information in the new environment. Thus access to information is conditioned by the technology. But availability of the technology shows extreme disparities in different continents, regions, countries and their areas. This phenomenon is now commonly referred to as 'digital divide' which is a matter of international debate and concern from quite some time now. The phrase 'digital divide' refers to the gap that exists in most countries between those with ready access to the tools of information and communication technologies, and the knowledge they provide access to, and those without such access or skills. Unesco and a host of other organizations are ceased of this problem through different programmes. World Summit on the Information Society (WSIS) is attempting to develop a common vision and better understanding of the Information society and develop an action strategy to overcome the problems. It has already organized meetings in Geneva in July 2002, February 2003 and December 2003. Next conference is scheduled for

November 2005 in Tunisia. The United Nations Commission on Science and Technology for Development (UNCSTD) while investigating the benefits and risks of ICTs expressed concern that the diffusion of these technologies was extremely uneven throughout the developing world. As a result of this, there is a high risk that those without access to these technologies will not be able to keep pace with those exploiting these technologies ⁽⁶⁾. The Bill and Malinda Gates Foundation (BMGF) is building upon the unprecedented opportunities of the 21st century to improve equity in global health and learning. In partnership with a host of civic groups, it undertook a programme to equip public libraries in USA with computers and Internet connectivity to reduce the digital divide in that country. As a consequence, 95% of public libraries offer public access computing and 14 million Americans regularly use these computers. Most benefited are those socioeconomic groups who lack Internet access at home or work⁽⁷⁾. Bill Gates Sr., Co-chair of the BMGF, rightly says: *Today, if you can reach a public library, you can reach the Internet.* The purpose is to bridge the gap between 'Info-rich' and 'Info-poor'

3.2 Information Overload:

Again those who have the information available and the ICTs gadgets to access it, as a consequence of Information explosion, are faced with information overload. Society is being held hostage by a battery of information which threatens to accede out ability to manage it. Some argue that we are inundated with information to the extent that some scientists claim it takes less time to do an experiment than to find out whether or not it has been done before. Statistical estimates have evidence to prove that more new information has been produced within the last three decades, than in the last five millennia. No wonder, a weekday edition of New York Times contains more information than an average person was like to come across in a lifetime three centuries ago. Examples of this information overload are galore.

Lyman and Varian estimate that world

produces 1.5 billion gigabytes of unique information every year. Approximately this equates to roughly 250 megabytes for every man, woman and child on earth or the equivalent textual content of 250 books each ⁽⁸⁾.

Information overload thus denotes the inability to extract needed knowledge from an immense quantity of information for one of many reasons. It can occur when a person:

- does not understand available information.
- feels overwhelmed by the amount of information to be understood.
- does not know if certain information exists.
- does not know where to find information.
- knows where to find information, but does not have the key to access it.

3.3 Information Anxiety:

The information overload has led to what is now referred to as Information Anxiety — the overwhelming feeling one gets from having too much information or being unable to find or interpret data. Wurman, while taking stock of this irritating situation, writes:

Information anxiety is produced by the ever-widening gap between what we understand and what we think we should understand. It is the black hole between data and knowledge, and it happens when information does not tell us what we want or need to know. ⁽⁹⁾

Information anxiety results from our inability to access and extract meaning from the wide accumulation of information available to us. It is rightly said that information itself has no value; it is the communication and sharing of information and its meaning which gives it value. What we need is a better way to manage information without being held hostage by it. If we improve how we retrieve information, then our information anxiety will be reduced. Denning analyses this situation and prescribes remedial measures:

*The visibility of personal computers, individual workstations, and local area networks has focused most of the attention on **generating** information the process of producing documents and disseminating*

*them. It is now time to focus more attention on **receiving** information, the process of controlling and filtering information that reaches the persons who must use it.* ⁽¹⁰⁾

3.4 Information Literacy:

Then we come across problems in information access and its use. To access information in the proliferating ICT environment calls for peoples' awareness of the use of information and their mastering the skills essential to access and exploit information to their advantage, both in personal and corporate life. Naturally the information literacy is now regarded as the core competency in living a successful and prosperous life in this new age. It calls for becoming conscious about the need and use of information and possessing proficiency in skills essential to locate, evaluate and use effectively and efficiently the information needed in different phases of life. Now it includes 'digital literacy' to encompass skills in handling digital resources and skills such as 'hypertext navigation'. Add to it the skills needed to exploit information in an *ethical* way in the wake of the availability of information in cyber media, Internet in particular.

Naturally the information literate people are those who have learnt to learn, whatever the media or technology. American Library Association has a Committee on Information Literacy and a brief quote from its Report appears to be appropriate.

To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information. Producing such a citizenry will require that schools and colleges appreciate and integrate the concept of information literacy into their learning programs and that they play a leadership role in equipping individuals and institutions to take advantage of the opportunities inherent within the information society. ⁽¹¹⁾

Thus information literate persons may be defined as competent, independent learner. They can judge well their information needs and

actively engage in the world of ideas. They display confidence in their ability to solve problems and know what relevant information is. They are able to manage technology gadgets to access information in modern information superhighways and download and archive it, take print outs and communicate it to others through electronic means. And, of course, they should be print literate as well because printed word still maintains its utility and it is not possible to eliminate it.

4. Libraries in the ICT environment

Historically, Libraries of all hues have been providing a meaningful structure for collection, organization and accessing of information to facilitate accomplishment of all enterprises in which the social beings have been engaged worldwide. These libraries would professionally select and acquire information sources, organize them with a unique professional mechanism and make them available to those who needed them. Naturally, the access to information was conditioned by possession. Further in the hoary past libraries would offer reactive services, in a way services on demand, when patron would physically enter the library and search for information or ask for it. But with the march of time they were prompted to adopt sophisticated, responsive and advanced active services. Yet another dimension of these services was the introduction of customized services tailored to the requirements of the individual patrons.

However, the advent of the Information Age has eroded the dominance and centrality of the print on paper. Electronic information superhighways have emerged as most effective and expeditions ways of information dissemination and access. Philosophy of possession that libraries had been following for a long past has now been substituted by a philosophy of access in the emerging ICT environment. But the importance of reading has not diminished at all. It is immaterial whether one reads from a printed document or from a digital document appearing on the screen of the computer visual display unit. Some people think that with the availability of information on the Internet, the importance of libraries has diminished a great deal. But such thinking is

doubtful. Borgman has summed up this situation thus:

The claim that the Internet will replace libraries is based on questionable assumptions. These misconceptions often are that all useful information exists somewhere on the Internet, that it is available without cost, and that it can be found by any one willing to spend enough time searching for it. ⁽¹²⁾

The libraries in order to be dynamic and adaptive to the new modes of information generation and access are, however, called upon to exploit ICT in their operations and services. It has become inevitable for them as it offers panacea to many maladies plaguing the library world from quite some time now. The problems facing the information consumers in the wake of the emergence of Information Society pinpointed here earlier also had an impact on these library operations and services. The public perception of libraries as traditional print warehouses also began to change. This situation brought to the fore new components in Information Management revolutionizing the whole gamut of library operations and services. Borgman offers four challenges for rethinking in the role of libraries in the digital age: “ how to maintain visibility while being a part of a well-functioning information infrastructure... how to manage collections as they become more hybrid and distributed... how to preserve physical and digital materials... how to take advantage of blurring boundaries between information institutions and information professions.” ⁽¹³⁾

With these writings on the wall, the library profession, in order to retain its prestigious position in the new social environment has to address the following crucial matters. US and Europe has already made timely advances in this direction. The developing countries too have initiated programmes to gear up their libraries to operate in the new environment.

4.1 Exploiting ICT in Information Management:

The libraries in order to be socially relevant have to exploit and apply ICT intensively in their operations and services to evolve a new

Information Management model. Collection management concept has to be extended to include digital and cyber information resources. Creation and maintenance of portals with relevant information sources selected from net surfing is another case in point that serves as an effective remedy for the information overload the people are wailing about everywhere and for fighting information poverty. Computer workstations with access to Web resources and other Internet facilities constitute an important component in such an environment. The card catalogue is now replaced by Online Public Access Catalogues (OPACs) and WebOPACs to provide remote access to library catalogues requiring standards different from the card catalogue. For this purpose new metadata standards have been formulated. The Dublin Core Metadata Initiative is a notable example.

The traditional classification schemes that have served well the organization of information sources in libraries in manual environment may not work well with the Internet. Some search engines such as Yahoo and Google have adopted adhoc classification systems that allow users to search by media type or document format. Efforts are also now made to improve basic document description beyond the limitations of HTML giving birth to extensible and dynamic mark up languages.

In the services sector the customized information services supplemented by ICT gadgetry has a high prospect in libraries of today and tomorrow. One can easily envisage replacement of stacks laden with print materials by computer workstations with ergonomically sound furniture. The Internet holds a high promise for promoting information services in libraries. Introduction of World Wide Web (WWW) by Tim Berners Lee provided the infrastructure for flexible use of the Internet. The web stimulated the launching of Internet 2 (I2) to introduce much greater bandwidths to ensure better communication and transmission of information. Supplementing the traditional reference sources by portals, webiography and blog technology for netizens is a good case in

point.

4.2 Networking:

Libraries have been concerned with resources sharing mechanisms from quite sometime now. Earliest manifestation of this concern has been Inter Library Loan. As the problems facing the libraries intensified from time to time they developed different resources sharing programmes to offer adequate, responsive services to their clientele. Now the ICT has made possible establishing networks of different topologies that ensure expeditious information sharing services. Standards for compatibility are available and networks are now fully abloom at different levels worldwide. India too has made strides towards developing national and several metropolitan networks for library use. Libraries of all hues are now required to work towards networking to reap the benefits of resources sharing in true sense.

4.3 Patrons empowerment:

Libraries have been offering services to their patrons on their arrival in libraries. Later libraries took a U turn — instead of user coming to the library, the libraries began extending services at the workplace of the patrons. But it was restricted to Current Awareness Service and its sophisticated version of Selective Dissemination of Information (SDI) and to a limited extent.

But now with the digital and cyber landscape the library professionals would do well to strive towards patrons' empowerment. This would mean offering information to the patrons at their work stations without any intermediary any time and round the clock. A virtual library with virtual information sources must be the ultimate goal for this purpose. The library personnel shall spend time on surfing the net, sifting relevant information, organizing it on portals and then offer the quality information to the clients wherever they are and whenever they need. They will also develop appropriate retrieval mechanisms to ensure efficient recall and precision. This will go long way to eliminate problems of information overload and information anxiety highlighted earlier.

4.4 Human resources development:

Educating and training library professionals to handle the global information infrastructure to provide responsive, customized information access services to the public is yet another major issue. The ICT have penetrated deep into every facet of library operations and services. The education that used to be imparted in library schools till recently needs to be augmented by ICTs components. The library professionals have to be retrained in the new media as navigators and providers of cyber service to develop competencies so that they are able to perform in electronic and networked environment. They need to be trained in computer hardware, software and networking technologies, and developing digital libraries using software developed for them such as Dspace, Greenstone etc. Library schools worldwide are already seized of this problem and are finetuning their curricula to suit this news environment. University Grants Commission in India too has published the Curriculum Development Committee Report which reflects this change in LIS education in the country. The curriculum, however, has to be reviewed from time to time. This becomes imperative as the techniques of publishing, organizing and accessing information are changing continuously as a result of technological developments, competitive information market place and the growing sophistication of information exploitation in all enterprises. Continuous professional development to keep current with developments that are taking place in the wake of advances in ICT also is essential aspect of professional education.

5. Conclusion:

To conclude, the Information Age is full of opportunities and challenges. Information access in this age calls for transforming the traditional ways, particularly with regard to accessing and exploiting the vast electronic resources that are piling up day in and day out. Libraries too have to change in this new environment to exploit the news technologies

to ensure universal availability of information. They have to extend and modify their operations and services and adopt new information management tools and techniques. The challenges posed by the ICT can be overcome by equipping libraries of all hues with adequate technology and providing them training facilities in exploiting them to their advantage. The digital divide can be contained by making these facilities available in public libraries as has been done in US almost all public libraries have Internet facilities. Similarly, Information overload, information anxiety and information literacy problems can be dealt with by involving libraries in combating these challenges, no doubt, in collaboration with other agencies interested in tackling these problems. This is all the more important now as we live in an Information Society set up by the Information Age which has evolved an Information economy. Libraries' role in this society and economy need to be recognized in a true spirit. If we fail to do so, both libraries and society are bound to suffer.

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