Digital Library Information Communication Process, Media and Diffusion: a Analysis

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Abstract : Modern digital library role of information communication is progress under ICT (Information Communication Technology) moderate, feature of library conception machine barcode label provide particular information source indicate location library resource RAFID technology, Information is multimedia in nature comprising text, pictures, drawings, audio, video, animation and computer graphics. When represented in digital form, information of any kind appears as a string of ones and zeros. This helps in building systems that are capable of handling ones and zeros only and such systems can be made very robust. This is the underlying consideration for adopting digital technology. A large volume of information in nature appears in analogy form that requires to be converted to digital form. The advent of Information and Communication Technology (ICT) has offered a tremendous opportunity to generate new knowledge, disseminate, distribute, and provide access and many other facilities cutting across space.

Keyword:

Digital information, *Electronic Media*, *Digital Library*, *Communication System*, Role of Information Today, legally acceptable document, Digesting Document,

Introduction:

The organisation of public knowledge in their physical forms of print and non print materials, in libraries and information centres, has to continuously grapple with the rapidly expanding dimensions of knowledge. Not only new disciplines are emerging, the multidimensional and interdisciplinary nature, and a host of other factors makes it essential to keep the tools of organising collections with the same pace of the growth of knowledge. Libraries and information centers disseminate information about their collection through their catalogues, bibliographies, indexes, abstracts and other such products. Provision of subject approach to documents through these types of secondary tools, has been and is a major challenge to library and information professionals. Classification Systems, Subject Heading Lists, Information Retrieval Thesauri are some of the tools and techniques that have been employed in information storage and retrieval. These tools have to keep updated with the expanding horizons of knowledge. The designing of these tools and their developments need to be on

a theoretical basis to respond to the unprecedented expansion of knowledge. This need was seen by Dr. S.R. Ranganathan and he developed his general theory of classification with laws, normative principles, postulates, canons, etc. In so far as libraries and information centres are concerned, while these distinctions between data, information and knowledge are useful and necessary to determine the types of services that can be planned and offered, user's information needs are really the determining factor in building up a collection or in serving the clientele. Libraries or information centres are built in support of information needs of the parent organisation, which is involved in some activities. We have taken four typical areas to illustrate these points. These are:

i) Education, training and skill developments, research and development;
ii) Government affairs;
iii) Business and industry; and
iv) Mass communication.

Information and knowledge, have to be understood in their widest connotation to grasp fully their impact on society. A network of concepts are associated with information and knowledge, such as data, facts, intelligence, know-how, skills, experience and wisdom. It is the combination of all these concepts that go to provide the necessary creative capabilities and competence to transform a non-resource into a value-added economic resource. the word 'information' has no single universally accepted definition, there is no one single way we can group or classify information. In fact, the types of information could be grouped using different characteristics depending upon the purpose of such a classification. Keeping these in view, let us choose a set of characteristics on the basis of the modified Shannon-Weaver Model of information transfer with an added one viz. information needs. These are:

Source - Channel - Media - Information Needs - Recipients

Create information. Basically, there are two ways of communication:

1) Oral communication,
2) Written or Documentary communication.

Media is obviously the plural form of 'medium'– which is the conductor, the channel, and the means by and through which something is transmitted. In other words, medium is the channel through which messages or information are transferred to the receiver. Most of the communication systems, whether sophisticated or not, are perceived to possess the following basic elements:

i) Information source
ii) Encoder
iii) Message
iv) Communication Channel
v) Noise
vi) Decoder and
vii) Receiver/Destination

Communication media can broadly be classified into conventional and nonconventional media. Conventional media mainly comprises print media, including graphic media while non-conventional media comprises mainly electronic media including optical and hyper media.

Print Media

Print media include: books, learned periodicals, conference proceedings, magazines, newspapers etc. The main function of these media is to provide information, and in certain cases provide entertainment also. The audience for the print media could both be specialised, diverse and large. As a means of communication the book has monopolised for centuries, followed by the periodical and other forms of communication media, which make available more information for use. Other types of print media like indexing and abstracting periodicals, directories, conference proceedings, etc. Provide information about where to find information from primary sources like books, periodicals etc. Print media still remains a powerful communication media.

Electronic Media

Electronic media refers to such media where messages are sent by such mechanisms as telephone, telegraph, facsimile, etc. For example, broadcasting which is carried out by radio and television provides with news and entertainment to general public. These different media are briefly discussed in this section.

i) Telegraph: This is one of earliest methods of modern telecommunication. It was invented by Samuel Morse in 1830. The invention of telegraph has increased the speed of human communication. It involved the manual keying of messages using a code known as *Morse code*. The code is built up of short and long pulses of current in the telegraph wire, with the transmitter's Morse key. One of the major developments in telegraphy is the invention of Baudot code system.

ii) Telephone: The development of the telephone represented a solution to the technological problem of conversion of the sound patterns of human voice into electrical patterns. Telephone happens to be one of the largest established methods of electronic information transfer.

iii) Broadcasting Media: This makes long distance message transmission possible between sources and receivers without the need of transportation or a direct physical (wire) link. In case of broadcasting message is transmitted in the form of energy waves in the electromagnetic spectrum. a worldwide television and telephone network that links every country on the globe.

iv) Electronic Mail*:* It is conceived primarily as an alternative to the conventional postal mail service. It is used for the transmission of messages or documents in an electronic form. In most of e-mail systems, transmission is accomplished via telecommunications network designed for data transmission. The input to and

output from an e-mail system can be via a video terminal, or a word processor with a printer, facsimile machine or any data terminal including computer vision and voice communication systems.

v) Videotext and Tele text*:* Both these are interactive information services and that these allow individuals to request frames of information. But, they are somewhat different technologies. In other words, Tele text is delivered over the air while videotext is delivered by wire. In videotext, a person can request for information from a central computer for delivery over telephone or cable television lines.

vi) Videotext is a generic term that refers to both Videotext and Tele text. Tele text and Videotext are the most radical of the new communication technologies which have brought the powers of computer to the home TV Set and have transformed the entertainment medium into an information appliance.

vii) It may be mentioned here that electronically the society has progressed from the wired era of telephone and telegraph to wireless era of broadcasting and now stands on the threshold of era of integrated grid. Integrated grid refers to the communication infrastructure that is now taking shape world over, with internet revolutionising the communications network.

The developments in ICT are changing the entire nature of telecommunications. In the foregoing sessions we have learnt about communication media: conventional as well as non-conventional. Since the conventional media are inadequate to cope with the contemporary information environment, the nonconventional media have been developed. These media have not only enhanced the speed of communication, but also increased the chances of information access. Computer mediated communication systems have brought in these advances. The information profession is the body of people engaged in the generation, collection, codification, storage, retrieval, manipulation, management, dissemination, packaging, evaluation and marketing of information.

Role of Information Today :

We know how knowledge and information have got to be diffused and disseminated for validating them initially for quality assurance and later applying the validated information and knowledge for various developmental purposes. This process of diffusion and dissemination adds value to primary information through critical analysis. This type of quality control has evolved as an established practice in scientific and technological research and development over. This system of information dissemination, some of the factors attributed to the current value of information and knowledge, which have contributed so much to socio-economic developments, they are:

Research and Development (R & D)

It is increasingly realized and recognized that information and knowledge and their application for transformation of non-resources into value-added economic resources are the real driving power for human material progress. This assessment has resulted in the creation

of institutions exclusively for Research and Development (R & D) in the last two centuries in the western countries,

Fusion of Science and Technology (S & T)

In the last half a century, there has been a fusion of science and technology that has begun to transform the character of technology itself. For a long time, science has grown independently without relation to technology. But as science developed in association with technology, and integrated framework of reference (conceptual as well as theoretical) resulted offering much greater explanatory power.

Science and Technology (S & T) and Societal Information

Another important point to note is the last quarter of a century is the increasing emphasis on the application of science and technology to social and economic developments. The organizing principle for information systems and services today is a mix of Science, Technology and Societal Information (STSI) for all socio-economic developments. Development, being a complex and multidimensional process, involves information and knowledge inputs of science and technology and their applications.

Information Technology

The rapidly developing information technology has revolutionized information processing, storage, dissemination and distribution and has been the chief instrument and a major contributing factor to change in society. These technologies are not merely rapidly developing, but they also are converging and integrating, giving an unprecedented push to growth and development in everything.

Information Demand

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Power Shift

Information and knowledge have become a tremendous source of economic and political power as they have become the principal driving force for the acquisition of wealth, political strength and more knowledge. Information rich countries of today are becoming even more powerful than the colonial powers of the nineteenth and early twentieth century's on account of their expertise in creating new information and knowledge and exploiting them for Their advantages.

Library Documents Digitizing

Non-electronic documents and analog electronic documents need to be converted to digital form in order to make them digital documents. In this section, we learn the process of digitizing a non-electronic document. In the next section, we learn about converting analog documents into digital documents. A non-electronic document may be a paper document or use any other medium like palm leaves and may contain hand- or typewritten text, photographs, illustrations, drawings, artwork, graphs etc. There are two major steps: *scanning* or *imaging* and *compression*.

i) Non-electronic Document
ii) Digital Imaging Digital Document Compression

Awareness of different digital information standards has become important for the library staff, particularly in the context of converting conventional libraries to digital ones. This section presents a brief overview of the standard digital formats that are widely in use for documents, audio, still images and motion video. In general, the standard formats deal with one or more of the following aspects:

i) Storage or transfer
ii) Information structuring
iii) Information presentation.

A large number of physical quantities measurable or observable in this world are analog in nature. By analog we mean that these quantities take on values that vary continuously with time.

1) Basic text formats

Text formats are the simplest form of digital formats and are largely used for documents containing predominantly textual information. There are three text formats used for text representation: ASCII, Unicode and RTF. Of these, the first two are used for encoding characters. Unicode is a 16-bit code that has the capacity to represent 64k characters. At present, 38,885 characters have been defined.

2) Presentation formats

Presentation formats are meant for on-screen display or printing. They are based on page description languages that preserve the look and feel of the original layout with precise location of graphical elements. Two well-known presentation formats are *Postscript* and

Portable Document Format (PDF). Both the formats are developed by Adobe Corporation and need the special software package distributed free by the corporation under the trade name *Adobe Acrobat Reader* for browsing. PDF is an improved version of Postscript that supports features like table of contents, internal hyperlinks and thumbnail views.

3) Structured formats

Structured formats are somewhat like presentation formats but are more flexible. They do not retain the original look and feel of the documents but are used for on-screen display and printing. They are based on *mark-up* principles that are practised by the publishing industry. The mark-up, however, takes place in the electronic domain instead of the conventional markings on paper documents. There are three structured formats that are in use:

i) Standard Generalised Mark-up Language (SGML)
ii) Hypertext Mark-up Language (HTML)
iii) Extensible Mark-up Language (XML)

4) Image Formats

There are three commonly used formats for storing and transferring digital images obtained from a scanning or a photographic process:

i) Tagged Image File Format (TIFF)
ii) Graphics Image Format (GIF)
iii) Joint Picture Expert Group (JPEG) format.

The first two of these formats use information-preserving compression techniques and the last one uses a lossy compression technique.

5) Audio Formats

There are a number of digital audio formats proposed and used by different manufacturers and expert groups. Important ones among them are WAV by Microsoft, AIFF by Macintosh, AU by Sun Micro Systems and MP3 by Motion Picture Expert Group (MPEG). Video Formats Digital motion video formats are standardized by Motion Pictures Experts Group (MPEG) set up by ISO. These standards are used for recording video on CDs and digital videotapes in compressed form. Standards for transferring real time video on telecommunication networks are evolved by International Telecommunication Union (ITU). At present, there are three MPEG standards in vogue: MPEG-2, MPEG-4 and MPEG-7. Two observations are in order with regard to motion video.

Futhur of Study :

This study make conception about modern information system and demand of user , library process document for soft copy distribution via electronic media. electronic documents must provide for information integrity, authentication, accessibility, and confidentiality in order to qualify as a legally acceptable document.

Conclusion

Much as the paper based documents, electronic documents must provide for information integrity, authentication, accessibility, and confidentiality in order to qualify

as a legally acceptable document. Integrity of an electronic document means that the document is so preserved as to represent accurately the information originally generated, transmitted or received without loss, damage or manipulation. The format of preservation may be the same as in the original document or may be different. If the preservation format is different, then there must exist a means by which it can be demonstrated that the integrity of the original information is unaffected. Accessibility means the ability to gain access to the original document for subsequent references in future. The requirement in conventional law that information shall be in writing or in the typewritten or printed form is actually met by the accessibility criterion of electronic documents. Conventional written documents ensure non-repudiation by contracting parties at a future date. Similarly, electronic contracts must also provide for binding the parties concerned to the document in such a manner that none of the parties would be able to deny the content of the document. The requirement of any conventional law that affixing the signature of the person(s) concerned shall authenticate a document is met by digital authentication procedures in electronic documents. A digital document is authenticated by *digitally signing* or by affixing a *digital signature*. Much as the paper based signature, digital signature also identifies the originator of the electronic document, and conveys the express agreement to the contents of the Confidentiality implies a provision to be able to send documents to selected persons only. A confidential document can be opened (accessed) and read by only those who are authorised to deal with such documents. Confidentiality provision also covers privacy aspects and private communication. It should be possible to define different levels of confidentiality such as:

i) Confidential
ii) Strictly confidential
iii) Secret and
iv) Top secret

Secrecy in communication systems and digital storage has been almost always achieved by the use of cryptographic techniques. Cryptography may be defined as the art of hiding the significance of information while communicating or in storage. Applying an encryption method and an encryption key to the plain text produces cryptographer text, known as cipher text in technical terms and as coded message in popular parlance. The cryptographic system is known as private key cryptography or symmetric crypto system. If the two keys are different, but form a unique pair with certain properties, the cryptographic system is known as public key cryptography or asymmetric crypto system. The public key cryptography system is the one used for authentication of digital document.

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