Access to information and acquisition of knowledge in electronic environment era.

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Abstract:

Libraries throughout the world originated with the basic idea of organising collections of documents. The libraries have always acquired the relevant resources, organised them, preserved them and have made them available to the users whenever required. With the rise in information technology, the forms of these resources have undergone a continuous change from print media to the present day web 3.0 based web resources. Correspondingly, the present day librarians have realised the importance of changing with times and are adapting to the latest upcoming technologies and systems. This paper attempts to portray the changing nature of information retrieval in libraries and the fact that library professionals have to upgrade themselves in order to remain relevant.

Keywords: Information Retrieval, Digital Library, Information Technology, Semantic Web, Ontology, Laws of Library Science.

1.0 Introduction:

Libraries of modern times have constantly undergone various modifications, be it in terms of collection, services, users, storage media, etc,. During earlier times information was mostly available in books and journals and the readers were provided with the sources available in the library. It was up to

the user to find out the information required by them. At present, due to the impact of information technology, which has lead to information explosion, the information required by the user is spread out in many formats and at various geographical locations.

1.1 Information as key for acquisition of knowledge:

'Information' is something which informs, in other words it can be said to be an answer to any question. Any information received is valuable as it enables the receiver to evaluate and make changes according to the information received. Information was earlier available in the traditional print media in the form of books, scholarly journals, newspapers, magazines, etc. As a result of digitization, came in the concept of electronic libraries which included print and electronic versions of the documents. Information was stored in formats like CD, DVD, etc,. Consequently many of the sources started becoming available only in the form of electronic documents. This concept of digital libraries which came into existence was a total change from the formerly existing traditional libraries. A digital library is not only digitization of the physical resources but also effective and proper organization for easy access. With the introduction of Internet/ Intranets, the concept of remote access to the contents and services of libraries collection with the help of electronic network gave rise to the virtual library. The characteristic of a virtual library is that the documents are necessarily in the electronic format with no corresponding physical collection and which are spread out in various geographical locations that can be accessed from any workstation. Thus, the transition is the technological development with Web1.0 being the 'read only method of communication,' Web 2.0 being the 'read-write-and share and currently, Web 3.0 era, where information is also available online in a variety of digital formats. These materials include web pages, PDF documents, e books, multimedia, etc., and the change is from read-write to read-write-share and execute.

The term information has undergone a massive change in terms of its meaning as well as its usage in today's world. The librarian is always an essential part of the library. Librarians are information

specialists, whose main aim is to fulfill the information needs of library users. Irrespective of the requirements of the users, librarians were always well equipped with all the traditional library functions like catalogueing, classification, reference services, etc. Now the role of the librarian has been enhanced as it is necessary to compile the information available in various sources and to provide them in a manner as required by the user. Librarians are always in direct contact with users seeking diverse information. As far as the librarians are concerned accessing the information which is available in various formats and at various places, is not sufficient. The effectiveness lies in putting forth the information across the users efficiently.

With the advent of the information and communication technology (ICT) there has been effective changes not only in the sources of information, but there also has been drastic changes in the roles played by the information specialists. The library professionals are constantly trying to adapt themselves to the technological changes. This would enable them to provide better and more effective services to the users. Presently the library and information professionals need to adopt an interdisciplinary approach in their profession. In addition to enhancing the library skills, they should also highlight various other aspects like updating their computer knowledge, honing managerial skills, learning about computer networking, etc. In the present day scenario, the library professionals are expected to have the following wide range of skills. They are:

- Build up a strong base by acquainting with the various existing information resources.

- If working in a specialised library, the library professional needs to get a good hold over the concerned subject area, and as well need to continuously update the upcoming developments in the particular field.

- The library professionals should adopt the policy of change management as due to the innovations in technology there is an increasing need for change in the various facets of library

science also.

- The librarians should understand the growing importance of digital/electronic resources and should find out ways and means to extract the relevant information. They should also be able to guide the users in handling these resources.

- Traditional library skills of catalogueing and classification should be employed in today's libraries focusing on the various requirements by the users in today's networked environment.

Information retrieval is the act of obtaining resources relevant to an information need from a collection of information resources.

2. Access to information from traditional era to digital era:

The five laws of library science proposed by Dr. S.R. Ranganathan in 1931, who is widely regarded as the father of modern library science is still considered as the basic foundation for a library system to function efficiently. His five laws have provided powerful guidance for generations of librarians. For the purpose of evaluating various library programmes, formulating policies and implementing strategies, these laws are respected and referenced even today, more than 80 years after its publication. An expansion of these laws in terms of today's technological advances was given by Michael Gorman and Walt Crawford in 2005-2006. Very recently on the occasion of the 123rd birth anniversary of Dr. S.R. Ranganathan on 12th August, 2015 Dr. B. Shadrach from India has proposed the following and re-written five laws of library science which are applicable to all in this digital era. They are:

1. Knowledge is for use in 'all' forms.
2. Every citizen has the right to access this universe of knowledge.
3. Every piece of knowledge is for access by 'all' without discrimination of any kind.
4. Save the time of 'all' knowledge & information seekers.

5. A library is the one that evolves with time to achieve all of the above laws.

Interestingly, a research was conducted by OCLC on user behaviour and the findings from the research have been brought out under the research publication namely 'Reordering Ranganathan: Shifting user behaviors, shifting priorities. It mentions how the five laws of library science are relevant even today as it was in 1931. In today's times information is abundantly available in multiple formats and in a variety of settings. This has resulted in rethinking the ways in which these laws can be made applicable in various libraries. The researchers believe that it's time for a change in the focus and emphasis with regards to these laws. Views of various librarians, library researchers and information scientists had been obtained to understand the changing nature of the five laws and how these laws are being put in practice today. A suggestion for reordering of the laws has been given by the researchers which denotes how the digital and web revolutions have transformed the relationship with the academic community, resources and services. Accordingly, the reordering of the laws is as follows:

i. 'Save the time of the reader' – The main aim of the library staff should be to make provision for easy retrieval of information. This will require the library to move from the perspective of an institutional resource to a network resource.

ii. 'Every person his or her book' – The interpretation of the law in present times is that the librarians have to reach out to new skills, new services and new collaborations to anticipate the user requirements in the present digital environment.

iii. 'Books are for use' – It is a known fact that even during Ranganathan's time the main aim of having books was not only for stock collection purpose but accessing the contents and making them widely available to the users. Even today the emphasis should not be only in making the digital materials physically available but the necessary infrastructure should be made available to access them. The librarians should also have the technical know how to assist the users and

should be able to reach up to the users' expectations.

iv. 'Every book it's reader' – The users must be able to locate the relevant information, should be able to access it and should also be able to use it to their full potential whenever required. Networking is the key to this and librarians should also make efforts to make their services socially sharable through various social networking sites.

v. 'A library is a growing organism' – During earlier periods growth of a library was in terms of books, staff and readers. Librarians should always remember that they are a part of the service industry. In today's times, the definition of growth of library includes electronic materials, digitization efforts, upgraded services and new kinds of infrastructure for remote access.

Librarians should accept that change is constant and should be prepared to accept the challenges.

Irrespective of the type of the library, the most important function to be performed is that of information retrieval. The library professionals cannot stick to the age old methods of making various catalogue cards, preparing lists, maintaining registers, etc. All these have to be implemented in the present day scenario. Over a period of time, library automation, digital library, content management, & reference management softwares such as KOHA, D space, Drupal & Mendeley etc., have been developed exclusively for the library professionals which have reduced the manual labour and have made the routine library activities much easier. This has enabled the librarians to effectively use their time and the existing resources to conduct various kinds of research and make better informed professionals. For the purpose of information retrieval a subject specialist librarian can no longer rely completely on keyword searches. Advanced methods of information retrieval need to be employed to make the process effective. Moreover presently the information that is available on the web is in the form of HTML which is designed for human understanding and not for machines. Library professionals understand that user-friendly information retrieval techniques need to be introduced. Library professionals should

thus think about the concept-based information retrieval method as a means of improving the search strategy. In concept-based information retrieval model, set of words, names, noun-phrases, terms, etc., are mapped to the concepts they encode. Here, the semantic search comes into the picture where a particular search is performed by connecting data.

"Semantic web is not a technology, but a philosophy." It is collection of information linked in such a way so that they can be easily processed by machines. The purpose of the semantic web is to make the semantics of information and services available on the web interpretable and understandable to machines so that user requests can be more accurately satisfied.

The semantic web is an idea where it would be possible to extract information from the web at large. *" The semantic web is not a separate web but an extension of the current one, in which information is given well-defined meaning, better enabling computers and people to work in co-operation" (Berners-Lee et.al., 2001).* There are various languages that are used and the language most often used is called the Resource Description Framework (RDF). RDF is a standard model for data interchange on the web.

Semantic web is based on ontologies. Ontologies are created by the mapping of various concepts. Thus, ontologies appear to be a useful method for moving from keyword-based to concept-based information retrieval system. In simple words an ontology is an organizational system designed to categorize and help explain the relationships between various concepts of science in the same area of knowledge and research. An ontology gives relationship between items in different categories in a graph model.

3. Use of Semantic web for library services :

The semantic web provides a framework to make technologies more feasible for library services. Libraries need to make their web pages using the semantic web technology. This can result in

better Web OPAC searches as the semantic web technology is understandable by computers and can therefore perform searches in a standardized manner.

Semantic web based reference services could be provided in combination with humans and machines. By using the semantic web technology, publicising the information services become easier.

Information sharing and resource sharing can be easy and more useful. This can be made possible between libraries that have developed their semantic web pages. Intelligent searches can be performed as semantic web will not provide information only based on keyword search but will also conduct the search by understanding the means of the words and its connections just as humans would do.

For the above library services to be made effective, the library professionals should acquire the latest IT skills for digital libraries and understand about ontologies for effective dissemination of information.

Some of the actual applications of ontologies and semantic web from the practical point of view are given below.

4. The National ontology library service - ONKI. ONKI is a major objective of the national semantic web ontology project FinnONTO. The main aim is to develop a semantic web ontology infrastructure on a national level in Finland. ONKI is used for publishing interlinked, collaboratively created ontologies and vocabularies in a centralized way. A solid, commonly agreed open infrastructure would make it much easier and cheaper for public organizations and companies to create interoperable intelligent contents and services on the coming semantic web. The main focus is on ontology publishing and using them in indexing and information retrieval. Most ontologies are freely available for users and ONKI Living Lab - an open lab for testing the

latest semantic web technologies in practice, is made available. Currently, over 10,000 people are using ONKI each month.

5. Ontology tools for developing an academic information search system :

In this particular paper 'Emerging of academic information search system with ontology based approach' authors Zaid, N.M. and Lau, S.K. present a comparison of various ontology tools for developing an academic information search system at a local university in Malaysia to search in the local language context (Bahasa Malaysia). This search system is expected to assist the inexperienced research students for searching academic resources in the local language. This search is expected to solve the dual problems the students face firstly the language barrier which limits the students to conduct a keyword search in foreign language (English) and secondly, due to limited research experience the queries often result in irrelevant searches.

Conclusion :

The above factors have also made the library professionals believe that they should prepare themselves anticipating the various changes that technology can bring in. The librarians should have a flair for continuous learning and thinking creatively.

The library professionals should understand that the basic principles of librarianship like catalogueing, classification, reference service, etc. will always exist and its up to the librarians to adapt to the changing technologies and repackage the information as required by the users. It was earlier believed by academicians and other professionals that the position of the librarian would become redundant with times. The truth is that the librarian has been raised to a more prominent position in any organization. This is due to the various responsibilities that they have to handle to deliver the contents by connecting to the right kind of information. It is very essential for library

professionals to stay focused, be multi disciplinary in approach by becoming competent in the various areas of library science, management, computer applications and others.

A report about the University of California Digital Library draws this conclusion:

"Experience indicates that, despite the availability of intelligent systems, increasing remote access will also increase demands for service, both online and face-to-face" (University of California Library Council, 1996).

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The pleasure of acquiring and producing knowledge grows and all learning comes easily—even that which we once most resisted. Often the hardest thing in life is changing our minds, yet it is the very definition of freedom and joy to do so. My resistance to "having" to take three semesters of a foreign language as a freshman now looks silly and not a little petulant. But, most of all, it was just a knee-jerk reaction not at all thought out. This has changed markedly with the internet because special interest information is a lot easier to access now: if you want to read about the Buffalo Sabres hockey team, I am sure there are several websites devoted to it—both official and unofficial. There is a runners' forum I'm on, I'm sure there are forums for hunting dog owners and gardeners and bird watchers, too. The access to electronic information resources in academic libraries and among University students is rapidly increasing as a result of the massive adoption of information communication technology. Electronic Information Resources (EIRs) play vital roles in helping libraries in their quest to support the teaching and learning process at University level and to provide quality assistance to its users. Thus Libraries are using technology to improve the acquisition and management of scholarly information to strengthen and speed access to scholarly information not held locally. Knowledge acquisition is an activity of knowledge engineering that is very important in the initial phase of system shaping for building the fundamental knowledge base, as well as in the application phase of the system for knowledge base updating [8]. To the domain knowledge to be initially acquired also belongs, in addition to the textbook knowledge of the domain, the related heuristic and. the meta-knowledge, if available. All employees are also automatically granted access to documents created in GovSystem by Executive Workforce Management employees. By developing specific procedures to work around the system's access limitations, they do not face any of the access restrictions that we will describe next. Electronic information resources help to expand access, increase usability and effectiveness and establish new ways for students to use information to be more productive in their academic activities. Survey design adopted. Generally, therefore, the university environment is a place where transfer of knowledge and information takes place. The achievements of the goals of the institutions depend to a great extent on the level of services and resources provided by the academic library. Access to articles in electronic journals (e-journals) can also be made through services which offer searchable databases of contents of e-journals from several publishers like Emerald, Sage, etc. and link to journal site for full text. Access to relevant environmental information can help to improve the ecology of industry. Imagine geographic databases that allow cross correlation of municipal and industrial discharges in various media (air, water, land). Envision the siting of industrial facilities on the basis of environmental carrying capacity of a geographic location. Think of the capability to determine the environmental profile of common industrial products. Technically, these capabilities exist. Customers of state agencies (the public) are demanding that compliance and permit data be made available in electronic formats and be accessible. Page 177 Share Cite. Suggested Citation:"Public Access to Environmental Information."