

Information and Communication Technology (ICT)-Based Services and Resources: Showcasing the Libraries of the Leading Academic Institutions of India

Asifa Ali*, Shabir Ahmad Ganaie**

Abstract

During the last few decades, the whole world has observed tremendous changes, especially in the field of Information and Communication Technology (ICT). The advent and the continuous advancements in the ICT has brought a technological revolution in almost every sphere of life, the libraries being no exception. Over the last few decades, there has been a paradigm shift in the role of the libraries from the custodians and caretakers of traditional print resources to the providers of service-oriented digital information resources. With the advancement of ICT, increased use of computer networks, rapid growth of information explosion and growth of internet, libraries are in the way of adopting new ways and means for storage, retrieval and dissemination of information for sustenance in this information age. In this milieu, the present study highlights the use of various types of ICT-based library services and resources provided by the leading university libraries of India. The study is also an effort to know about the availability of different e-resources, presence of digital reference service and institutional repositories, availability of web OPACs and remote access to the electronic resources. The top 25 universities of India were selected for the present study according to the "Times Higher Education" Asia University Rankings 2017. The Times Higher Education World University Rankings are the global performance tables that judge research-intensive universities across all their core missions: teaching, research, knowledge transfer, citations and international outlook.

Keywords: ICT, E-Resources, Library Services, Digital Reference Service, Institutional Repositories, Remote Access

Introduction

The increasing growth and development of Information and Communication Technology (ICT) has played a vital role in the progress and advancement of the society in general and library and information science in particular. The revolution of ICT in the last few decades has brought tremendous changes in the concept, organization, working and management of the Library and Information Centers throughout the globe. The impact of these changes is affecting all the aspects of library operations, information resources and services, staff skill requirement and user expectations. ICT offers diverse ways and opportunities for the development of new services and improvement of quality of life (Moodley, 2004). He reported that these electronic activities made the present era known as "Information Era" and made individual or social actors live in the current information societies. ICT has a huge potential for providing wide range of new opportunities and offering better solutions to achieve greater levels of efficiency, productivity and higher standards of quality services in libraries. ICT has been such a wonderful creation that has influenced the various aspects of human activities in the present era, called as information age. It has changed the mode of book and data handling in such a way that along with the traditional print resources of information getting swamped a lot due to the electronic form of information. This is due to the advantages of electronic information resources, they can be accessed from anywhere, anytime and by any number of people

* Research Scholar, Department of Library and Information Science, University of Kashmir, Jammu & Kashmir, India.
Email: asifalis100@gmail.com ORCID: <https://orcid.org/0000-0002-5821-4779>

** HOD, Department of Library and Information Science, University of Kashmir, Jammu & Kashmir, India.

to find their required information (Tiwari, 2016). Today libraries and information centers have developed and diversified their services based on the advanced tools and applications of ICT. The needs and the demands of the users have also changed. In present environment, almost all the libraries in the world are offering new innovative web-based services such as web catalogues, search engines and portals in order to satisfy the increasing demand of their users (Syed, 2002). The popularity of e-resources among the users is increasing day by day, an overwhelming attention is given to the ICT-based services in the libraries (Krishnamurthy & Chan, 2005). Electronic information resources have been defined as “Information stored in a medium, which requires an electronic device to read its content” (Pathak & Das, 2001). It includes various types of media, including magnetic (RAM, hard drive, diskette, tapes) and optical (CD-ROM, DVD) media. However, it has also been defined as information that users access electronically via a computing network (Shim, McClure, & Bertot, 2001). E-resources are the invaluable research tools which complement print based resources in any traditional library, because they provide access to information that might be restricted to the patrons because of geographical locations.

Literature Review

Vast amount of literature has been published in the fields of applications of ICT in various library operations, services, e-resource, professional development and continuing education needs of library staff in these days. ICT-based services have always been a major component of library services. As a result, the emergence of ICT has challenged the academic libraries to provide online based services to their users and researcher population. Introduction and development of the ICT and its associated Web technologies in the past decade have significantly influenced both the way libraries provide information services to their users and the way users choose to access information (Chowdhury & Margariti, 2004). Moreover, the move towards an online environment has resulted in a paradigm shift from the systematic one-to-one information flow to the new model in which the users and providers of information are able to relate with many to much dynamic relationship. In modern technological era the emphasis has shifted from physical resources to access to electronic

resources that are globally accessible. These e-resources offer various benefits to the university libraries. A study in this regard found that e-resources reduce the pressure on physical space for storage of books and journals, provides remote access of information, precision and speed and un-vandalized and in the right place and provides unlimited access to users (Teh, 1997). The findings of another study suggested that the use of electronic and audio visual resources in libraries has broken the barriers of time, distance and locale which hampered the growth of formal education. As a result, students use these electronic resources to complete their assignment and research work (Aramide & Bolarinwa, 2010). These resources have the potential and enhance the teaching learning processes of the students. The major role of these resources in teaching and learning has become a most widely discussed topic in contemporary education policy. One study has identified that popularity of e-resources lies primarily in their flexibility with respect to searching, retrieving and preserving as compared to the print resources; as they can be accessed remotely at any time (Salaam, 2008). Regarding the exploitation of various ICT tools and applications by the libraries, various studies have found that the university libraries of India are still lagging far behind, as they have not yet been able to exploit fully the potential of ICT-based library services (Madhusudhan, 2012; Bhat, 2016). The social media technology services should also be used to keep the users abreast with the latest and upcoming library resources and services through the library websites of universities. Studies have found that majority of the libraries use commercial online databases and that various electronic databases and online journals had a profound impact on the Libraries (Barlow & Graham, 1999). Haneefa (2007) investigated the use of the ICT-based resources and services in the special libraries in Kerala. The main findings are that e-mail is used by the largest percentage of users. World Wide Web was being used by 60% of the library users. A good number of users were not satisfied with the application of ICT in the libraries and indicated that lack of adequate infrastructure was the main reason for dissatisfaction. Another study found that a good number of libraries in India are subscribing to CD-ROM databases and online journals in order to satisfy the increasing demands of different kinds of users (Moorthy & Karisiddappa, 2001).

Objectives

- The study revolves around the following main objectives:
- To identify various types of electronic information resources made available by the leading university libraries of India to their clientele.
- To assess availability of different ICT-based services supported through the library websites of these institutions.
- To find out accessibility of digital reference services and Web-OPAC provided by these libraries.
- To analyze the status of institutional repository developed by these libraries.
- To explore the availability of remote access service made available by these libraries.

Methodology

Because of the huge population and area of India as a nation, it has one of the largest higher education systems in place. In this regard, to make the present study possible, we included only the top 25 ranked institutions of India. The “Times Higher Education World University Rankings 2017” was used for this purpose. The Times Higher Education World University Rankings provide the comprehensive list of the world’s best universities, which they evaluate across various core missions: teaching, research, international outlook, reputation and more. The method of Online Survey was used to collect data from all the top 25 university library websites in India. Each university was manually accessed to check for the laid-down objectives, i.e., to check the availability of web-based ICT applications and e-resources, employability of digital reference services, availability of web-OPAC and institutional repositories. The collected data was tabulated and analyzed using Microsoft Excel and accordingly the results were interpretation.

Data Analysis and Interpretation

Electronic Information Resources

Electronic information resources are becoming increasingly important to all types of libraries. The

explosive growth of ICT and widespread reliance on computer networks accelerated the use of electronic information resources to a great extent. The electronic databases form a sound foundation for providing efficient information services in libraries. In recent years the demands for database services are increasing, since most of the latest information is available in online databases. It is evident from Table 1 that among different electronic resources, databases and electronic journals top the list of available of e-resources (100%) followed by electronic books (72%) while as, audio visual resources and consortium stand next (32%) however, E-thesis, digital libraries online tutorials, E-newspapers, microfiche/microfilm, E-standards are 28%, 24%, 16%, 12%, 8% in and E-patents are least only 4% respectively.

Table 1: Availability of Different Types of E-Resources

S. No.	E-Resource Type	No. of Universities
1.	Database	25(100%)
2.	E- Journals	25(100%)
3.	E-Books	20(80%)
4.	Audio Visual Resources	8(32%)
5.	Consortium	8(32%)
6.	E-Thesis	7(28%)
7.	Digital Libraries	6(24%)
8.	E-Manuscripts	4(16%)
9.	Online Tutorials	3(12%)
10.	E-Newspapers	3(12%)
11.	Microfilm/Microfiche	3(12%)
12.	E-Standards	2(8%)
13.	E-Patents	1(4%)

ICT-based Library Services

Almost all the operations in a library can be automated to achieve more efficient and effective functioning and for providing excellent library and information services. Librarians were asked to indicate the library housekeeping operations they had automated. The table below depicts that almost all the libraries (100%) has computerized circulation system. All university libraries had fully automated system with barcode technology. All the work of circulation can be done through computer

except the delivery of the document physically. A good number of libraries (92%) are providing the reprographic services like Xerox, binding and printout facilities in their respective libraries. However, a good number of libraries (60%) are using Inter Library Loan (ILL) services to borrow books from other library through resource sharing method, followed by reference service (56%). Only (16%) of the libraries are providing Current Awareness Services (CAS) to keep updated about the latest development of particular field subject. While as less than (12%) of the libraries are providing the facilities of E-mail alerts, Book bank Services, CD library and CD-ROM services.

Table 2: Library Services Employed in Universities

S. No.	Library Services	No. of Universities
1.	Circulation	25(100%)
2.	Reprographic Services	23(92%)
3.	Inter Library Loan	15(60%)
4.	Reference Service	14(56%)
5.	Current Awareness Service (CAS)	4(16%)
6.	E-mail Alerts	3(12%)
7.	Book Bank Services	2(8%)
8.	CD Library	2(8%)
9.	CD-ROM Services	2(8%)

Digital Reference Service

Internet has entirely changed the traditional type of reference service. Now a split of seconds trillions of documents such as e-encyclopedias, e-dictionaries, e-maps, e-books etc. are accessible. Most of these are free and some are accessible on payment. Now the reference librarian will have to be aware of e-resources so that they can guide the needy students and researchers. Digital reference services are very helpful to users as it serves the needs of users virtually without any geographical barrier. This kind of services are very fruitful as large number of users are benefitted without any requirement of them to visit the library in person. However, a positive sign is observed from the data as it is evident that majority of university libraries about (60%) are providing the digital reference services and only 40% do not provide any such services, as shown in Fig. 1.

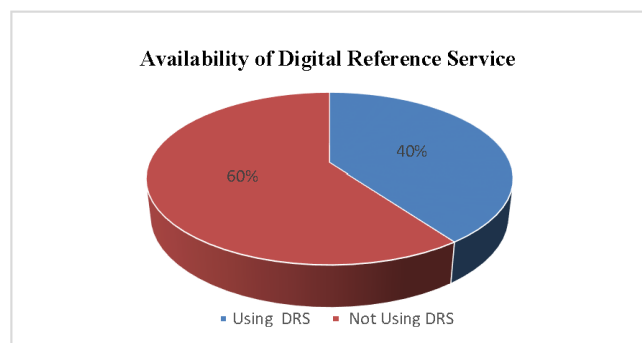


Fig. 1

Building of Institutional Repositories

In the present age of digital library and online learning, institutional repositories have acquired a greater significance. These repositories help the researchers across the world in collection of relevant material for themselves. In today's world no scholarly communication is possible without the digital repositories. These institutional repositories includes archive of an institution's scholarly papers deposited by their authors. It is observed that more than half of the university libraries (64%) have built their own institutional repositories while as (36%) of the libraries do not possess any repositories, as shown in Fig. 2.

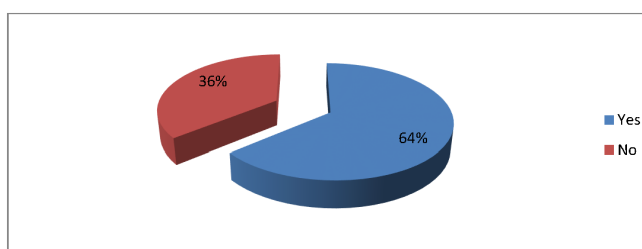


Fig. 2: Building Institutional Repositories

Employability of Web-OPAC

Due to extreme influence of ICT, the traditional library catalogue has changed to Web-OPAC, thus has enhanced the retrieval of information and proved to be economical both in-terms of money and time. It is an electronic library catalogue, which contains complete bibliographic information of all items in the library. It brings information about where material is located in the library, whether

it is available for loan, when the item is due back if on loan and how long it may be borrowed. It is obvious from the Fig. 3 that (76%) of the libraries have realized the importance of Web-OPAC, while as, (24%) a small fraction of universities are still not using this service.

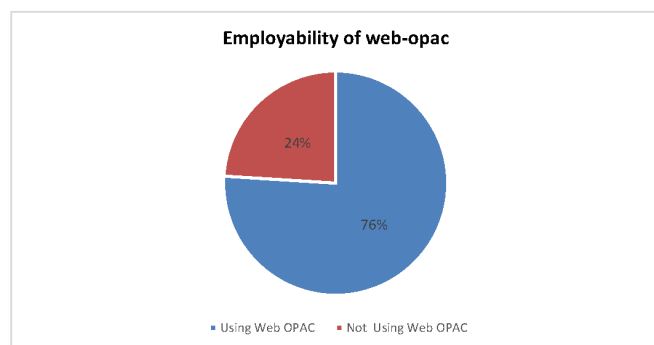


Fig. 3

Accessibility of Remote Access

ICT-based services provides remote users with access to information organized in a database with greater flexibility, precision and speed as compared to print resources. The alliance of computer and telecommunications have improved the potentialities of computer in the information transmission process cutting all the geographical boundaries. The Fig. 4 shows that almost half of the libraries (48%) are providing the facility of remote access to their users, while as (52%) are not availing this service in their libraries.

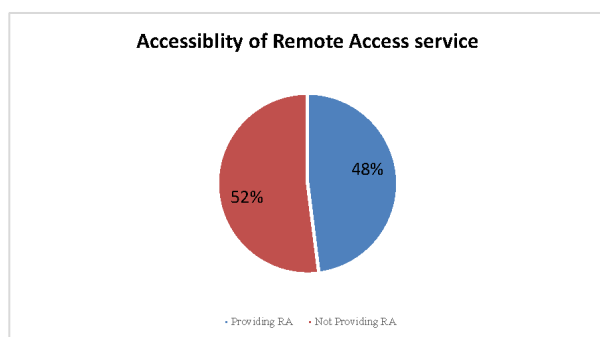


Fig. 4

Special Features in Library Collection

A library cannot be considered to be successful if it has collection only for those limited number of people as the

society is made up of diverse categories. A hopeful sign is evident is that only (16%) of the libraries have designed a library collection for specially abled persons to cater the needs of special category of users, followed by (8%) libraries are providing the facility of plagiarism checker service and only (4%) are proving the library collections for children, as shown in Table 3.

Table 3: Special Collection of Resources

S. No.	Special Collection of Resources	No. of Universities
1.	Specially Abled Children	4(16%)
2.	Plagiarism Checker	2(8%)
3.	Children's Library	1(4%)

Conclusion

Today, modern academic libraries are more depend on the ICT-based services. It is a good sign for digital revolution in the field of library and information science. At the same time, we need to accept the new tools and technologies of ICT such as web 2.0 in general and library 2.0 for library. All library and information professionals have to try their best for meeting the loud demands of digital information. They have to cultivate rare users into habitual users. Right attitude about work and strong will power is more than enough to provide best ICT services and achieve maximum user satisfaction. This present study showed that application of ICT in academic libraries has become unavoidable in the age of information explosion and widespread use of digital information resources. This study has provided the useful summary of the ICT-based services and resources in the leading universities in India. Almost the libraries was effectively use the various ICT-based e-resources like databases, e-journals, e-books, A/V resources, e-thesis etc. Some university libraries are struggling in the use of few e-resources like e-tutorials, microfiche/microfilm and e-newspapers. This is due to the lack of financial considerations, lack of infrastructure and lack of trained professionals. Majority of the university library are using ICT routine based library operations like circulation, reprographic service, Inter Library Loan, CAS, E-mail alerts etc. Circulation is the only service that are used by almost all the university libraries. About 60 % of the libraries are using digital reference service to cater the immediate needs of the patrons. The use

of institutional repositories in libraries is quite good, 64% of the libraries have built their own repositories to deposit their research papers. Almost 75% of the libraries are realized the need and importance of web-OPAC, in order to save the valuable time for searching of required document. Only 48% are providing the facility of remote login of e-resources in order overcome the geographic barrier. There are few libraries that are proving the library collection for the specially abled children, in order to cater their needs also. Similarly, only two university library that provides the facility of plagiarism checker for researchers to check the authenticity and duplication of their research work. At last, there is only one university library that take care the educational needs of children.

References

- Aramide, K. A., & Bolarinwa, O. M. (2010). Availability and use of audiovisual and electronic resources by distance learning students in Nigerian universities: A case study of National open University of Nigeria (NOUN), Ibadan study Centre. *Library philosophy and Practice*. Retrieved from <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1409&context=libphilprac>
- Barlow, L. J., & Graham, M. E. (1999). The use of information and communication technologies in commercial libraries in the UK. *Program*, 33(2), 109–128. doi:10.1108/EUM00000000006914
- Bhat, M. A. (2016). *Future of Libraries trends, issues and challenges*. New Delhi: Blackprints.
- Chowdhury, G., & Margariti, S. (2004). Digital reference service: A snapshot of the current practices in Scottish libraries. *Library Review*, 53(1), 50–60. doi:10.1108/00242530410514793
- Haneefa, M. (2007). Application of information and communication technologies in special libraries in Kerala (India). *Library Review*, 56(7), 603–620. doi:10.1108/00242530710775999
- Krishnamurthy, M., & Chan, W. S. (2005). Implementation of library portals for information resources: A case study of the Indian statistical institute, Bangalore (ISIB). *International Information and Library Review*, 37(1), 45–50. doi:10.1080/10572317.2005.10762664
- Madhusudhan, M. (2012). Web-based library services in university libraries in India: An analysis of librarians' perspective. *The Electronic Library*, 30(5), 569–588. doi:10.1108/02640471211275657
- Moodley, S. (2004). The information society: A critical assessment. *Mousaion*, 22(2), 230–234. Retrieved from http://www.sabinet.co.za/mousaion/mousaion_v22_n2_a6.xml
- Moorthy, A. L., & Karisiddappa, C. R. (2001). *Information infrastructure and use of electronic media in Indian libraries*. Proceedings of the First South Indian Library Conference on Role of University and College Libraries in the Changing Information Scenario, Potti Sreeramulu Telugu University, Hyderabad, 148–162. Retrieved from http://www.researchgate.net/publication/279649967information_infrastructure_and_use_of_electronic_media_in_indian_libraries. amp.
- Pathak, P. J., & Das, S. (2001). Utilization of electronic information at IPR library: A case study. *Information Studies*, 2(7). Retrieved from <http://www.drct.isibang.ac.in/bitstream/handle/1849/86/Ba.pdf?sequence=2> pg2
- Salaam, M. O. (2008). Option for access to journals, print, CD-ROM, on-line in a Nigerian Agricultural University library. Samaru. *Journal of Information Studies*, 7(2), 24–27. Retrieved from <http://www.ajol.info.sjis.pdf>
- Shim, W. J., McClure, C. R., & Bertot, J. C. (2001). *Measure and statistics for research library networked services: Procedures and issues (ARL E-metrics Phase II Report)*. Washington, DC: Association of Research Libraries. Retrieved from <http://www.arl.org/stats/newmeas/emetrics/phasetwo.pdf>
- Syed, S. A. (2002). Managing change to enhance web-based services in the Arabian Gulf libraries. *Online Information Review*, 26(4), 265–270. doi:10.1108/14684120210438714
- Teh, K. (1997). *IT utilization and library automation in Malaysian educational institutions*. Retrieved from <http://web.simmons.edu/~chen/nit/NIT'96/96-303-Teh.html>
- Tiwari, S. K. (2016) *A study on impact of ICT on library and information services*. Retrieved from <http://www.irdindia.in.pdf>