Use of Information Communication Technology in Academic Library

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Abstract

The study indicates that emergence of ICT is one of the awesome endowments of modern science and technology which has gotten extraordinary changes the historical backdrop of Library and Information science. Application of ICT to library and information work hand-in-hand. It has reformed the customary idea of Libraries from a storage facility of books to an intellectual information centre. It has opened up another section in Library correspondence and urged worldwide access to data crossing the geological confinements. Utilizing ICT, Libraries are likewise assuming a significant job in encouraging access to worldwide data and information resources. The study also found that the positive changes and impacts of information technology would be visualized across the globe out there are some negative trends too. As this era has witnessed the fast development of tools and techniques of information and some may fear that human would also be come like a machine.

Introduction

Academic libraries are established to support teaching, learning, research activities and development of a culture of sharing and imparting knowledge to fulfil the mission and objectives of their parent institutions. Academic libraries also play a pivotal role in ensuring the success of higher degree of research. The important activities of academic libraries include collection development, references services, document delivery, access to organized collections held by the library and assist users in information search.

Recent advances in ICT have not only increased tremendously the ability to access, store and process information within the library but also have brought significant changes in the concept, organization, functioning and management of library and information systems. In most of the academic libraries in the developed countries, Online Public Access Catalogues (OPACs) have almost replaced card catalogues, offering enhanced search capabilities for accessing the local collections; they often include the holdings of other area or regional libraries as well. Many libraries are also providing a web interface to their library and information system, often including direct links to electronic journals, books and Internet resources (Mohsenzadeh & Isfandyari-Moghaddam, 2009). ICT can support the functions and services of academic libraries in two ways: by providing the means to acquire, organize, store, retrieve, and disseminate information (Sabashini, Rita, & Vivek, 2012); and they are also used in libraries to connect library users with libraries and make relationship between librarians and library users. The most common application of ICT-based tools in academic libraries include

- Communication tools such as e-mail, instance messaging, telephones, tele conferring, Intranets and video conferencing, etc.
- Long-standing tools such as databases and institutional archives, etc.
- Social media tools such as wikis, blogs, online communities, social networking sites.

Over the last two decades, academic libraries in India have witnessed the impact of ICT on the structure of services. The academic libraries in India are at various stages of development in the applications

of ICT in their day to- day activities. Many academic libraries in India are already using computers and advanced telecommunication systems and many more are currently implementing such systems. Libraries in India have explored ICT for computerizing a wide range of administrative and technical processes, building databases, developing networks and providing innovative and intelligent information services.

Information Technology means a variety of technological applications in the process of communication of information. According to the Webster's New Encyclopedia, information technology is the collective term for the various technologies involved in the processing and transmission of information. Thus information technology includes computer technology, communication technology, multimedia technology, optical technology, networking and barcode technology, etc.

a. **Computer Technology:** Computer can store every variety of information recorded by people, recall it whenever need arises and can calculate millions of times faster than the human brain. Thus, computer can do precisely all those jobs in the library for which we use many devices with a set detailed instruction.

b. **Communication Technology:** It is used in communicating the information from generator to the user of the information. Some communication tools like telephone, fax, television, e-mail, and Internet are very much popular for communicating with the person.

c. **Multimedia Technology:** Multimedia technology is most commonly applied to the simultaneous use of sound, text, image and video in preparing presentations and used in bigger libraries where the special kinds of students have to access and used for it.

d. **Optical Technology:** Compact discs are one of the most important and useful electronic media of storing the information. A CD-ROM can store a huge amount of records of library like Ramayana and Mahabharata.

e. **Networking Technology:** Merging of computer and communication technologies has emerged as a networking. In India NICNET, INDONET, PUNNET, CALIBNET, DELNET, INFLIBNET are some of the important networks.

f. **Barcode Technology:** Barcode technology can be defined as a self contained message with information encoded in a series of black bars of varying breadths and white spaces between every two of them. These are helpful in terms of circulation work and stack verification work of library documents.

The use of computers has been steadily increasing in science and technology since the 2nd World War. Most of the advanced countries of the world have made much advance in this respect but India has just made a start, especially in industry and business and there also these are witnessing stiff opposition from the employees and their trade because of the fear of retrenchment. However, their application is increasing day by day in science, technology, industry and business. Libraries are no exception to them. As the library authorities and librarians are becoming aware of their potential uses, these are being put to more use. It is hoped that by their use, libraries would increase in the years to come in India, thought not at a rapid speed, especially because of our socio-economic conditions and the prohibitive of their installation and maintenance.

The materials of information in both print and non-print media (i.e. manuscripts, books, journals, reports, films, discs, tapes) continue to be produced and used in greater and greater quantities. As Xerox Corporation put it in one of their promotional brochures in 1984, "recorded knowledge has doubled during the last twelve years. It will double again during the next ten." This vast amount of information has to be processed, stored and retrieved whenever required. The very complexity and magnitude of the problem makes it an impossible task to process by manual method. Library and information professionals are increasingly being compelled to take the help of semiautomatic and automatic machines for information

handling. The revolutionary developments in information technology have two impacts. Firstly, as more and more information is readily available in machine-readable form, there has been a fundamental shift in the concerns of the information profession from "more information" to "accurate, up-to-date and timely information." Secondly, as computers are used increasingly for provision of information, librarians and other information professionals must familiarize themselves with the latest technological development in this field.

Objective:

• To identify the use of different ICT-based tools for knowledge sharing.
• To examine the librarians' perceived challenges of ICT application.
• To facilitates the maximum utilization of resources.
• To avoids duplication in resources.
• To make overall improvements of library services.
• To provide better library services with less budget and safe the times of user.
• To identify the problems faced by the students and faculty members while using different ICT based applications.

Scope:

The scope of the present study in Academic college library is limited to Wardha city.

Research Methodology:

We conducted a survey of academic libraries to address these objectives.

Method of Research:

- Questionnaire method
- Interview method

The investigator used the questionnaire method for collection of data for the present study. A self-structured questionnaire was designed for purpose to collect data about the infrastructure available at the college libraries for access of ICT application and the respondents for the same were librarians/in-charges of the college libraries under study.

The personal interviews will also conduct with library and information science professional to access the problems relating to use of ICT by the faculty members. Primary survey will be conduct to collect the information regarding use of social media.

*ICT and Library Services

The following library services can be rendered using information and communication technology (ICT):

On-Line Public Access Catalogue (OPAC): ICT has revolutionized the practice of cataloguing in the library. Using OPAC users can see the holdings of the library collections. It reduces the cost of maintaining a library catalogue. It also eliminates pen and paperwork, along with it helps in the preparation of union-catalogue. OPAC is the easiest way to get the information of collection, weekly new arrivals and other recent addition to the libraries.

Reference/ ILL Service: By using computer and internet technology, the reference service has become very simple. Various types of information resources like the encyclopedia, directories, dictionaries, databases, online library catalogues, maps, biographies, patents and online information resources are available on the

internet which can be used to provide required information to the users. In the reference section, queries are answered through the telephone. For ready reference service, library staff uses Internet and E-mail facility. The computer has provided a great promptness to reference section. The role of technology in reference services are as follows:

- Library staffs fulfill the demands of the users through various electronic resources like database, library catalogue database, directories etc.
- In reference service, services are also provided to the users regarding information available on the internet after getting delivered through the computer.

Reprographic Servics: Reprographic technology is used for the reproduction of the documents. Using technology, the photocopy and the reproduction of the documents has become very easy and accessible. In this technology, printed documents are converted into digital form, then photocopy is prepared. For the same, computer scanner and software is required. This service is provided to library users for photocopy of some pages of books, journal articles or other materials.

Selective Dissemination of Information (SDI) Services:Hensley (1963) stated "SDI involves the use of the computer to select from a flow of new documents, those of interest to each of a number of users. This process may be thought of as the inverse of information retrieval. In information retrieval, a user precipitates a search of a file of documents. In SDI a document precipitates the search of a standing file of user interests". Through the computer, the profile and document of user are prepared and aligned. As per the need of the users or area of interest, various online databases, electronic resources and other materials are viewed and selected; finally required information is sent to library users.

Document Delivery Service: It is difficult for the library to procure every type of resources published across the globe because of financial constraints. So, the exchange of library resources such as books, journals, etc. among the libraries are very much essential. To overcome these problems computer and the internet have got a great contribution in DDS. Through this medium first document are converted into digital form after that these can be received at any place by users through electronic mail. Besides, the storage reading material like electronic periodicals, documents etc. can be disseminated to users on demand.

Bibliographic Service: Through the computer, bibliographic services have become convenient. Nowadays, libraries and publishers are providing bibliographic service to the library users. Bibliographic software such as EndNote, RefWorks, Zotero and Mendely are very much helpful to compile the list of references for the research work.

Translation Service: Mechanical translation is carried out with the help of ICT. For this purpose, various online tools like Bablefish translator and Google translator can be used to make translation from foreign languages to English and vice-versa.

Database Search Guide: At present, databases have become the central focus for exploration of varieties of the research problem. Researchers are using databases hugely for their research work. Searching and retrieving the online resources or data from the database has become very easy in the ICT environment. Generally, libraries provide the database searching guidance through the library website. The search guidance helps to researchers and faculties for their research and learning.

Information and Communication Technology (ICT) for Libraries:

In the past, volume of information was not as large it is today, and the libraries were in the position to organize the information materials through manual operation. But since the 2nd World War, there has been a tremendous output of information, which has been usually referred to as information explosion. The materials of information in both print and non-print media (i.e. manuscripts, books, journals, reports, films, discs, tapes) continue to be produced and used in greater and greater quantities. As Xerox Corporation put it in one of their promotional brochures in 1984, "recorded knowledge has doubled during the last twelve years. It will double again during the next ten." This vast amount of information has to be processed, stored and retrieved whenever required. The very complexity and magnitude of the problem makes it an impossible task to process by manual method. Library and information professionals are increasingly being compelled to take the help of semiautomatic and automatic machines for information handling. The revolutionary developments in information technology have two impacts. Firstly, as more and more information are readily available in machine-readable form, there has been a fundamental shift in the concerns of the information profession from "more information" to "accurate, up-to-date and timely information." Secondly, as computers are used increasingly for provision of information, librarians and other information professionals must familiarize themselves with the latest technological development in this field.

Table 4.1: Is ICT be part of library tools to provide more user friendly   services?

ICT in library	No.	%
Yes	89	95.69
No	4	4.30
Total	93	100

The results of table 4.1 revealed that 95.69 % of the respondents were of opinion for inclusion of ICT applications as library tools to provide more user friendly services and only 4.30% do not want library tools to provide more user friendly services

Table 4.2: ICT-based Information Services

Serial Number	Services	Frequency	%
1	Access to in-house developed library databases /OPAC/Web OPAC	16	80.0
2	Online tutorials on how to use the information resources/services	8	40.0
3	Access to electronic resources, (e-books, e- journals, e-databases, etc.).	15	75.0
4	Access to open access information sources through in-	7	35.0

	house developed subject gateways/Web portals		
5	Web-based reference or other information services	11	55.0
6	FAQ database	3	15.0
7	Automatic (electronic) mailing alert system	2	10.0

Table 4.2 shows that highest Access to in-house developed library databases /OPAC/Web OPAC 80% was found. Second of 75% Access to electronic resources (e-book, e-journal, e-databases etc.) and Web-based reference or other information services 55%, Online tutorials on how to use the information resources/services 40% , Access to open access information sources through in-house developed subject gateways/Web portals 35% , FAQ database15% and lowest was found Automatic (electronic) mailing alert system10%.

Table 4.3: ICT-based tools for sharing of knowledge

Serial Number	ICT-based tools	Frequency	%
1	E-mail	18	96
2	Phone calls/Teleconferencing	19	98
3	Intranet	16	75
4	Videoconferencing	3	15
5	Data Mining/Resource Discovery Tools	4	20
6	Institutional Repositories/Digital libraries	13	65
7	Wikis	7	35
8	RSS	6	30
9	Blogs	2	10
10	Social Networking sites	5	25
11	Book marking	2	10

Table 4.3 shows that both E-mail 96% & Phone calls /Teleconferencing 98% use. Intranet 75%, Institutional Repositories/Digital libraries founded 65% and Wikis 35% was founded. 30% RSS, Social Networking sites 25%, Data Mining/Resource Discovery Tools 20%, Videoconferencing 15% Blogs, Book marking show 10%.

Table 4.4: Training required for handling ICT-based Information Management Systems &services

Serial Number	ICT-Based Information/Knowledge Management System	Need Training	Trained Staff Available
1	Database creation & management	6(30%)	14(70%)
2	Content Management	12(60%)	8(40%)
3	Metadata/e-resource management	13(65%)	7(35%)
4	Web/portal development	15(75%)	5(20%)
5	Hardware Maintenance	14(70%)	6(30%)
6	Computer Programming	17(85%)	3(15%)

Table 4.4 shows that Trained Staff Available of Database creation & management 70%. Content Management founded 40%, Metadata/e-resource management 35% and Metadata/e-resource management 35% & 20% Web/portal development, Hardware Maintenance 30% Computer Programming 15%.

Table 4.5: Barriers related to the use of ICT in Academic Librarie

Serial Number	Challenges in ICT Application	Rank	%
1	Lack of trained Staff in ICT	1	85.0
2	Low level of ICT skills among library users	2	75.0
3	Unawareness of potential benefits of ICT	3	75.0
4	Lack of fund for ICT	4	70.0
5	Inadequate ICT infrastructure	5	55.0
6	Resistance of library staff to use ICT	6	45.0
7	Lack of updated ICT policy or strategy	7	35.0

Awareness of ethical guidance for using ICT	N	%
Yes	88	82.72
No	06	05.64
Total	94	100

Table 4.5: Lack of trained Staff in ICT show that 85%, Low level of ICT skills among library users & Unawareness of potential benefits of ICT both was founded 75%, Lack of fund for ICT 70%, Inadequate ICT infrastructure55%, Resistance of library staff to use ICT 45%, Lack of updated ICT policy or strategy 35%.

Table 4.6: Aware of ethical guidance for academic libraries for using ICT

It is evident from **table 4.6** that a majority of the respondents i.e. 82.72 % are aware of ethical guidance for using ICT. There are only 5.64% respondents who has indicated that they are unaware about ethical guidance about use of ICT.

Table 4.7: Satisfaction with the present status of ICT support at libraries

Satisfaction with availableSupport at college libraries	**Yes(%)**	**No(%)**	**Total %**
Are you satisfied with the present status of ICT support available at collegelibraries?	59	41	100

Table 4.7 shows that a majority of the respondents from libraries of colleges are satisfied with the present infrastructure available for access of ICT with 59% responses and near about 41% are not satisfied with the present support of colleges toward ICT.

Table 4.8: Reasons of dissatisfaction with the provision of ICT at college libraries

Reasons of dissatisfaction	**%**
Lack of technical manpower	25
Lack of training/ skills	37.5
Services to be based on charges	12.5
Poor infrastructure	50

Table 4.8 Librarians, who were not satisfied with the status of infrastructure for access of ICT, were further asked to indicate the multiple reasons of dissatisfaction. Table 4.9 demonstrated the various reasons of dissatisfaction among the college librarians. 50% of the librariansindicated poor infrastructure as one of the

major reasons for dissatisfaction, followed by lack of training/ skills with 37.5% responses. 25% of the respondents are of opinion that lack of technical manpower is another reason of dissatisfaction, followed by ICT services should be on chargeable

Table 4.9: Impact of ICT on library services

As per your opinion, please indicate the impact of ICT applications on library services?	%
Increase in use/ demand of e-resources	28
Increase in demand of web based services	17.5
Decrease in use of print resources	6.5
Decrease of library visitors (physically)	48
Total **%**	100

Table 4.9 shows that 48% of the librarians are of opinion that physical visitor ship will be affected with the addition of ICT tools in library, followed by increase in use of e-resources by 28% and web-based services with 17.5% response. 6.5% of the respondents are also in opinion that use of print resources will decrease if the ICT is used for delivery of library services.

Conclusions:

The ICT has a positive impact on all the library and information services like reference service, current awareness service, online public access catalogue, etc. Libraries and information centres are undergoing metamorphosis and are reengineering their services, reskilling their staff and reorganising their work space in consonance with changing information systems, better and more effective information communication channels, and users' preferences for accessing information in libraries. continuously adapting to contemporary changes in response to the changing educational dimensions, influenced by the media changes and the emergence of ICT and its developments. Hence libraries should raise the level of user expectations through marketing and promotional activities and build their capacities. For this purpose the academic libraries need to come together in consortia and networks to satisfy the information needs of the academic community. Although, there exists MALIBNET, yet it is not fully-operational as planned and the participating libraries yet to get the full desired benefits from this network.

The ICT is available in almost all the libraries surveyed which will help to share information resources. 'But the key factor in making the networks work effectively is the human factor-how good its vision, how effective its implementation, how participative its management and how committed the individual members. The academic libraries play an important role in the academic community by providing necessary forum and resources for faculty and students to do their research and advance their knowledge. To effectively meet the growing needs of the clients and achieve success in the management of academic libraries, need to actively address the many challenges for the design and delivery of innovative resources and services. Therefore, the very objectives of the libraries and what these libraries do need to be re-

examined in the changing IT environment based on the state-of-the-art. The nature and functions of the academic and research libraries is changing. They have been warehouses of published knowledge but with the emergence of electronic/digital resources, now can be thought of a gateway to the resources rather than a mere repository. The future library will be a hybrid library which must be user-centerd and expert-assisted. Librarians need to establish partnerships, coalitions, and connections, technological, personal and organisational, to ensure a central role in the third millennium.

Conclusion Academic libraries are facilitating more timely exchange of information among scholars and improve distance learning without any geographical barrier. It supports teaching, learning and research while reaching unreachable without walls. Greater revolution has occurred in the libraries recent past converting paper-based libraries to electronic based ones. With the emergence of ICTs and availability of national and global networks, libraries have turned their attention to digital collections rather than building printed-based collection. In this way, librarian's role dramatically changed and is responsible for what e-repositories available for their users and how users can access to the available information within the physical walls of the library or elsewhere. Many libraries, particularly academic, have provided access to good-quality information sources only to find that many of their customers display conservative tendencies and tend to shun new channels and to cling to the familiar, preferring to use hard copies of sources they know, even when the online version offers far more powerful searching capacity: it is clear that, for these customers, the ready availability of a technology does not guarantee its immediate take-up and exploitation(Morrow, 1999) and that the usefulness of a piece of technology is strongly tempered by the user's perceptions of its usefulness(Barry and Squires, 1995).

The major findings of the present study are:

1. The results of table 4.1 revealed that 95.69 % of the respondents were of opinion for inclusion of ICT applications as library tools to provide more user friendly services and only 4.30% do not want .

2. Table 4.2 shows that highest Access to in-house developed library databases /OPAC/Web OPAC 80% was found. Second of 75% Access to electronic resources (e-book, e-journal, e-databases etc.) and Web-based reference or other information services 55%, Online tutorials on how to use the information resources/services 40% , Access to open access information sources through in-house developed subject gateways/Web portals 35% , FAQ database15% and lowest was found Automatic (electronic) mailing alert system10%.

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4. Table 4.4 shows that Trained Staff Available of Database creation & management 70%. Content Management founded 40%, Metadata/e-resource management 35% and Metadata/e-resource management 35% & 20% Web/portal development, Hardware Maintenance 30% Computer Programming 15%.

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6. It is evident from table 4.6 that a majority of the respondents i.e. 82.72 % are aware of ethical guidance for using ICT. There are only 5.64% respondents who has indicated that they are unaware about ethical guidance about use of ICT.

7. Table 4.7 shows that a majority of the respondents from libraries of colleges are satisfied with the

present infrastructure available for access of ICT with 59% responses and near about 41% are not satisfied with the present support of colleges toward ICT.

8. Table 4.8 Librarians, who were not satisfied with the status of infrastructure for access of ICT, were further asked to indicate the multiple reasons of dissatisfaction. Table 4.9 demonstrated the various reasons of dissatisfaction among the college librarians. 50% of the librarians indicated poor infrastructure as one of the major reasons for dissatisfaction, followed by lack of training/ skills with 37.5% responses. 25% of the respondents are of opinion that lack of technical manpower is another reason of dissatisfaction, followed by ICT services should be on chargeable mode.

9. Table 4.9 shows that 48% of the librarians are of opinion that physical visitor ship will be affected with the addition of ICT tools in library, followed by increase in use of e-resources by 28% and web-based services with 17.5% response. 6.5% of the respondents are also in opinion that use of print resources will decrease if the ICT is used for delivery of library services.

Suggestions:

The above identified challenges could be solved through the following strategies:

1. Organizing a public awareness forum such as library orientation, conferences, symposia, workshops to create awareness and educate librarians and users on the social networking services and applications.
2. Embracing current change in order to remain relevant and adapt to the new ICT driven environment.
3. Imbibing a maintenance culture so as to manage the few available ICT facilities effectively.
4. Provision of stable power supply will encourage and facilitate the effective use of these tools.
5. Pro-active training of librarians to acquire 21st century skills to adapt to the changing ICT environment.
6. should take an active role in providing ICT facilities to institutions.
7. Educating the public on the issue of copyright law and violation.

On the basis of results of the study, following suggestions are set forth for further advancement in social media applications as per the requirements of health sciences education, so that these applications be used to better healthcare education and delivery:

A. Thus definition of a training policy to guide and direct the proper use of ICT is fundamental to moral development. Health sciences professionals must be aware of their responsibilities when using ICT tools and should be involved in discussions looking into the ethical aspects of their use (Englund et al., 2012) (Santoro,2011).

B. There should be proper trainings/ courses designed to educate the health sciences professionals and the designed education should be student-centered. Student orientation is an important point that should be paid special attention to in the development of education. To develop education student-centered further research is required to identify the most widely used applications. Even though ICT applications are widely used in free time, it needs different kinds of skill levels not only from teachers but also from students to use these applications in studies. ICT enables students to work independently, but it also allows extensive networks between students. The utilization of technology in education should be understood as an opportunity, not just the technology itself. In this way, we can enable deep learning and learning development (Tuominen, Stolt & Salminen, 2014).

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