21st Century Library Professionals in Dynamic Role in Digital Era

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Abstract

As technology continues to advance at phenomenal speed, library professionals have to play a speedy and dynamic role to keep themselves up to date and learn new set of skills to keep pace with the technological developments. The explosive growth and wide usage of web resources has made it imperative for the library professionals to equip new skills in the use of latest techniques and tools to cope up with new generation libraries. The fast-tracking pace of new technological developments, development of digital reference services demand different types of professional, managerial and communication skills, personal competencies and self assessment skills. There are many technological trends that impact the job of the library professionals. The automation of the library, the use of CD-ROM’s and the Internet has dramatically changed the role of the library professionals, making their job more demanding. The present paper highlights the role of library professionals in the era of change. An attempt has been made to observe the impact of ICT on librarians. States how the librarians cope up with the advance technology by acquiring different types of competencies. It also throws light on the challenging role of librarians in E-Learning age.

Keywords: Technology innovation, Technological literacy, ICT environment, Skills and competencies, Development of professional competencies, POSDCORB.
1. Introduction

Information technology has transformed the whole world into a global community, which is increasingly depending on the creative management and distribution of information. Over the past decades the world has been experiencing significant changes in which the need to acquire, utilize and share knowledge has become increasingly essentially. Now, in the 21st century, the age of knowledge and information is in its higher gear. This is an age when invisible knowledge and information take the role of prime movers leading all sector. Creative brains become leaders of economy and knowledge workers are in great demand.

Today mostly information is increasingly being produced in digital formats. Almost everyone involved in the knowledge production process, and give the preference of electronic form. These actors could be the creators of knowledge, the publishers of knowledge and the people that are finally responsible for permanently storing the resulting knowledge. It is very attractive to the author, publisher, vendor and libraries for this simple reason that give the revolutionized the way of knowledge which is produced and disseminated to end user, usually in a fast, timely and efficient way. Nowadays role of a librarian have completely changed in digital environment.

Now, information technology (IT) is a driving force for change in libraries. The strategies for building 21st century libraries and librarians must focus on the ability of librarians and libraries to not just adapt to change, but to prepare for it, facilitate it, and shape it. Recent rapid advances in information and communications technologies (ICT) have not only posed a variety of new challenges for libraries but also brought enormous change in library technical operations, functions, information resources, information product and services, staff competencies and user’s expectations leading to the evolution of new generation of libraries. Libraries are suffering enormous changes due to application of new technologies. The magnitude and speed of technological change in recent years has been phenomenal which may likely to continue at much faster rate in the foreseeable future.

The rapid technological change and transformation has tremendous impact on organization’s decision makers, library operations, information resources, information products and services, staff competencies and user’s expectations. A very rapid rate of technological innovations has made it imperative to consider technology as the crucial factor influencing the sanctioning and management of modern library.

Information technology is transforming libraries at a speed unimaginable just a few decades ago. The most pronounced difference between the digital/virtual/hybrid library of today and the traditional library of yester years is the result of rapid pace of technological change taking place in libraries. Technological changes have been of such magnitude that it is difficult for individuals and other institutions to follow them. In several technological sectors such as the information sector, more changes have occurred in the last few decades than in the previous few thousand years. Information technologies today are characterized by their very dynamic development and increasing complexity. The new technologies allow completely new solutions to old problems, and consequently old services are displaced by new service.

In the current turbulent phase of information technological development, this process of displacement of old solutions by new ones is particularly difficult to steer. The main characteristics of the information society have been defined as changed perceptions of the importance of the role of information; the growth in the amount of information now available and the wide variety of formats; the size and continued growth of the information sector in modern economies; and the rate of technological change in the impact of technology.
2. Technology innovation

Technology innovation transmutes old generation libraries (i.e. Traditional) into new generation (i.e. digital, virtual, hybrid) libraries.

As technology continues to advance at phenomenal speed, library professionals have to play a speedy and dynamic role to keep themselves up to date and learn new set of skills to keep pace with the technological developments. The explosive growth and wide usage of web resources has made it imperative for the library professionals to equip new skills in the use of latest techniques and tools to cope up with new generation libraries. The fast-tracking pace of new technological developments, development of digital reference services demand different types of professional, managerial and communication skills, personal competencies and self assessment skills.

In the age of Internet and communication technology, libraries must attract, retain and retrain the individuals who can master the increasingly complex information technology skills and manage the new generation libraries (digital, virtual, hybrid) in a ever changing and challenging dynamic technological development.

Today, the concept of library has been denoted by several different terms such as automated library, computerized library, electronic library, digital library, cyberlibrary, virtual library, library without walls, transformed library and so on. All these libraries are termed as new generation libraries.

Short description as follows:

**Hybrid library:** The hybrid library is a term used to describe libraries containing a mix of traditional print library resources and the growing number of electronic resources. Hybrid libraries are mixes of printed books and magazines, as well as electronic materials such as downloadable audio books, electronic journals, e-books, etc. Hybrid libraries are the new norm in most public and academic libraries.

**Automated library:** A library where access points and housekeeping operations are computerized is called an automated library. The graphic records are still print-on-paper publication.

**Digital library:** A library in which, a significant proportion of the resources are available in machine-readable format, accessible by means of computer. The digital content may be locally held or accessed remotely via computer networks.

According to Wiederhold “A digital library is popularly viewed as an electronic version of a library where storage is in digital form, allowing direct communication to obtain material and copying it from a master version.”

**Virtual library:** The access point as well as the graphic records are in electronic/digital form when these electronic/digital libraries are connected via various networks, particularly the INTERNET, this is called virtual library. A “library without walls” in which the collections do not exist on paper, microform, or other tangible form at a physical location but are electronically accessible in digital format via computer networks. Such libraries exist only on a very limited scale.

**Traditional library:** where the access points such as library catalogues as well as library collections are print based and their management is by and large manual.

3. How new generation libraries work?

The ultimate structural changes caused by information and communication technologies not only affected the administrative, technical operations of libraries but also transformed the library’s roles, functions and services significantly. Libraries are undergoing a profound transformation reflecting a sea change in the nature and type of their roles, functions and services due to the application of new technologies.
According to Cohn the four basic functions of libraries in an electronic age are:

- Providing access to the content of local resources (e.g. books, periodicals, media, electronic resources) that are part of the library's collection.
- Offering gateway access to remote resources (e.g. books, periodicals, media, and electronic resources) including the ability to obtain copies in printing and electronic formats.
- Facilitating off-site electronic access to local and remote resources from users' homes, offices and schools.
- Providing access to human assistance in locating information. The main function of new generation libraries is to provide the most convenient access to a wide range of global information resources in all types and formats as needed by the users in a timely and cost effective manner.

ICT has reshaped every activity of today's environment. It includes business, education, military, transportation, communication, scientific investigation, knowledge management, etc. Even it affects on our human life also. Developments in ICT have brought about an enormous impact on the way we live, work, think and play. These changes are quite widespread in our everyday lives, such as the use of e-mail, Internet and smart phones at home and in the place of work. Over the last few years, the library and information science environment has changed drastically in terms of collection, organization and services.

The e-resources have taken a significant space in the library collection, the operations and organizations of library materials are fully automated, new web based services are offered by libraries to attract user's involvement in redesigning the library system and services and so on. These changes are mainly due to the development and impact of Information Communication Technology (ICT) in libraries which have also made sea change in all walks of life. The ICT tools and services are being used in libraries to manage libraries more efficiently and to cater users demand properly. In this changing library scenario, the library and Information professionals must possess adequate IT skills to manage the modern libraries, more specifically the academic libraries. They need to obtain continuous knowledge and skills on the fast changing ICT environment to provide better library services to users.

4. Library Professionals in Era of Change

This is an era of change brought about by the introduction of informational technologies. “Library professionals have come a long way from the time when they were considered caretakers of the book collection. Now they are information providers, consultants, curriculum activists, instructional designers, instructional leaders, production specialists and most important, teachers”. Some agents of change are closely interrelated such as economic, employment, technological, and instructional trends. Economic trends impact employment. Employment trends in turn impact technology. Employment and technology trends likewise, have a serious impact on education and instruction. The economic trends that have brought changes to the role of the library professionals include reduced budgets at a time of increased costs for both resources and personnel.

There are many technological trends that impact the job of the library professionals. The automation of the library, the use of CD-ROM’s and the Internet has dramatically changed the role of the library professionals, making their job more demanding.

5. Technological Literacy

The use of technology has placed increased demand on library professionals’ time to teach information technology, to learn new technologies, to troubleshoot, and to learn which Internet resources can assist students and teachers. Technology has brought many changes to education in the past ten years and technological literacy is listed as one of the goals of the Common Essential Leanings, which is a component of the Core Curriculum. The goals of technological literacy are the following:
• To develop a contemporary view of technology
• To develop understanding that technology both shapes and is shaped by society
• To develop students’ appreciation of the value and limitations of technology within society
• To provide opportunities for students’ active involvement in decision-making related to technological developments.
• To contribute to development of ‘strong sense’ critical and creative thinkers
• To develop an understanding of how knowledge is created, evaluated, refined and changed within subject areas.
• To promote both intuitive, imaginative thought and the ability to evaluate ideas, processes, experiences and objects in meaningful contexts.
• To enable students to think for themselves, to recognize the limits of individual reflection and the need to contribute to and build upon mutual understandings.
• To support the development of a positive disposition to lifelong learning.
• To develop students’ abilities to meet their own learning needs.
• To develop students’ abilities to access knowledge.

6. Impact of the ICT environment on library professionals

Since we graduated as a professional librarian over some years ago our syllabus, training, and teaching methods are outdated, even though our tasks and responsibilities are still the same. Libraries now and in the future will be quite different from the traditional libraries that we know today. In digital environment most of the library functions and services are done and provided using ICT. The role of library professionals has been greatly affected by ICT. The traditional roles remain but the tools and techniques have changed. Library professionals now use electronic hardware and software to create, collect, consolidate, communicate and preserve information. That’s why today LIS professionals are given titles such as:

• Cyber Librarian,
• Web Librarian,
• Information Officer,
• Information Facilitator,
• Library Manager,
• Knowledge Bankers,
• Information Providers,
• Institutional Repositories Developer,
• Knowledge Manager/ Professional,
• Information Architecture,
• Information Scientist/ Specialist,
• Information Consultant and many more.

Thus, LIS professionals are wearing various hats, trying to cope-up with ever changing landscapes of printed as well electronic resources, information utilization and multifaceted, multidimensional, multidirectional and exponential growth of information itself.

7. Changing role of Librarians

In an era of digital information, electronic technology, www’s growing popularity and the tremendous growth of CD-ROM products, digital libraries over a huge range of multimedia information, everything from movies, speeches, images and photos to sounds, text and beyond. The amounts of online, CD-ROMs and other digital sources of information are exploding and infrastructure for accessing material improves almost daily.

In this situation, librarian became a predominantly online worker, supporting the citizen/worker by selling services. Finding relevant information faster than the competitors, faster than a non-information-worker can find it, and surviving on the basis of superior knowledge of the networks and
digital information resources available through them. In an age of great change in information formats, delivery models and technologies, and important new role emerge for the librarian. So, presently a librarian is called as a digital librarian, digital information professional, cybrarian and information broker etc.

The ready availability of information on the Internet, and its widespread use, really presents Librarians with an opportunity, not a threat. Technology Savvy users realize they need help, which Librarians can provide. Librarians now face difficulties and complicity challenges due to new trends in information access.

In the present technological/Internet era the professionals have to change themselves as the information profession is being changed. Now information specialists have to work as e-information resource in which various professional groups are expected to map strategies that leads to produce, manage, maintain and service the information. Information professional has to work as:

**Librarian**: In addition to being library manager, they also act as collection development, technical processors and so on, taking care of information quality.

**Information Manager**: To meet information need of the user they should know how to manage and deliver appropriate information services.

**Information adviser/instructor**: Ensure that user/staff know how to access relevant sources of information (literacy).

**System and Networking**: For delivery of information to their users in an appropriate manner development and design appropriate systems.

**Information Broker**
- Change Agent i.e. Technology Application Leader
- Facilitator
- Educator
- Innovator/Website Designer/Manager
- Database Manager
- Collaboration
- Policy maker
- Business Manager
- Image Maker

8. **Challenging role of Librarian in E-Learning**

Role of libraries in learning itself is established and beyond question, it hence follows that the supportive role in an enhanced form is also applicable in E-learning systems. Infact in this present online and distributed versatile, student creation learning environment, librarians have greater roles to play. Librarians with their experience of handling content in diverse ways make available shareable learning resources to the faculty and even among the visit tuitions.

In response to importance of library and information professionals in E-learning we may observe the positions like, “E-librarian”, “Cybrarian”, “Web Librarian”, “E-learning Information service officer”, “learning object librarians”, “E-learning content manager”, “Information manager” and so on.

In a fast-changing expanding diverse global digital information environment, libraries are facing a variety of complex challenges from various sectors of knowledge society in the ICT environment. The major challenges are:
- Information explosion,
- Growth and usage of web resources,
- Increases the level of technology literacy,
- Increases demand for better and faster access to information,
- Growth of student/researchers in numbers,
- Change in teaching and learning methods,
- Emerging new subjects,
- Development in research,
- Continuous rapid change,
- User's expectations,
- The need to manage resources on a value-for-money-basis,
- The requirement for user oriented, high quality services,
- Huge developments in information technology,
- Virtual learning environment,
- Development of digital, virtual, and hybrid libraries,
- Online bookshops and information services,
- Virtual educational institutions.

However, libraries and librarians should first educate and equip themselves with the necessary knowledge and skills before they can deal with this enormous challenge.

9. Skills, Knowledge, Competencies required for LIS Professionals

The basic goal of library and information profession has always been to provide access to information to those who need it. The activities realizing this goal have evolved and transformed over the years. This includes - Available technology, and need of an evolving information society. Information activities have been guided by the developments in the field of storages, presentation and archiving of knowledge, collection development and organization of knowledge, information explosion and computers in information retrieval. Librarian and information professional involved in information gathering, storage, retrieval and dissemination on one hand and on the other hand the computer specialists who supports the library and informational professionals in this endeavor. For successful implementation of Digital Library, it is essential that LIS professionals are well trained and possess requisite knowledge and skills in this respect.

**Knowledge and Skills:** Librarians need to know understand
- Knowledge resources (books, journals, i.e. resources, Internet)
- Teleological facilities and resources (computer, online catalogues, websites, LAN's file servers etc.)
- Financial resources (Budget) Human resources (Skills for manpower training).

**Competencies that required possessing in LIS professional:**
- Acceptance of change.
- Knowledge of user interaction with knowledge resources.
- Provide quality service.
- Be adoptive, flexible and resistant.
- Be resourceful.
- Possess excellent communication skills, constantly update personal knowledge base by keeping in touch with the latest development.
- Create awareness among the users, make them accept the changes.
- Be an information management strategist, etc.

**Technical knowledge required:**
- Operating systems - Windows, UNIX, LINUX.
- World Processing, Graphics, Spreadsheet and Presentation.
- Database Management Systems including the skills in Bibliographic Database Management Systems.
- General purpose programming, Networking.
- Web page Development and Content Management.
- Information Retrieval Software for online, CD-ROM and Internet.
- Library software packages, acquaintances with digital library tools.
Digital librarian plays a very vital role to manage and organize the digital library and manage the digital information resources. In the age of digital information, librarians and information professionals should be trained to be experts to information searching, selecting, acquiring, organizing, preserving, repackaging, disseminating and serving and a librarian should be theoretical and practical experiences in designing and implementing information system and become proficient and competent in several fields such as be able to guide and educate users, project management, metadata etc.


A fundamental role of a DL in digital libraries is to act as an intermediary who brings together users and information. Digital library access tools are the right set of tools used in novel ways to tackle a plethora of challenges and opportunities for information access technology and faster access.

Necessity is the mother of invention. The developing global digital libraries or world-wide digital information centers generate the need for creating a new job-title “DIGITAL LIBRARIAN” to manage their digital information resources. The enormous digital libraries are emerging acknowledge granaries. Digital libraries are required to:

- Manage the digital libraries
- Organize digital knowledge and information
- Provide digital reference services and electronic information services
- Handle the tasks of massive digitization, digital storage process, and digital preservation
- Catalogue and classify digital documents and digital knowledge
- Disseminate digital information from the computer-held digital information
- Provide knowledge mining from the knowledge warehouses
- Provide universal access and retrieval of digital knowledge, ultimately access to all

Having professional degrees in library and information science is not enough for LIS professional. There is need for libraries having multidimensional, multidirectional aptitude in the areas of technical work, managerial work and also in providing user oriented services along with soft skills. LIS professional should have key skills new generation of LIS professional of new that they can enhance the functioning of LIS professional more effectively.

- Has expert knowledge of the content of information resources, including the ability to critically evaluate and filter them.
- Has specialized subject knowledge appropriate to the business of the organization or client.
- Uses appropriate information technology to acquire, organize and disseminate information.
- Provides excellent instruction and support for library and information service users.
- Develops specialized information products for use inside or outside the organization or by individual clients.
- Develops and manages convenient, accessible, and cost-effective information services that are aligned with the strategic directions of the organization.
- Uses appropriate business and management approaches to communicate the importance of information services to senior management.
- Continually improves information services in response to the changing needs.

11. Professional Competencies

Qualified library staff with excellent custom service will boost the overall customer satisfaction and confidence in digital era. The more the staff understands customer preferences, the more a redefined segmentation can be achieved.

Professional competencies relate to the special librarian's knowledge in the areas of information resources, information access, technology, management and research and the ability to use these areas
of knowledge as a basis for providing library and information services. The following section highlights the major professional competencies of new era librarians.

12. Sources for Professional Competencies Development

Library Professionals have a wide range of channels and ways to develop their professional competencies and manage changing technologies effectively. The important methods/ways for improving professional competencies are:

- Acquiring formal qualifications
- Pursuing doctoral research
- Distance and E-learning courses
- Reading professional literature
- Tours and visits to well managed libraries
- Affiliation to professional bodies
- Attending professionals meetings.

Conferences and Seminars

- Presenting papers in conferences and seminars
- Writing papers in periodicals and books
- Participation in specialist groups
- Personal interactions with expert fellow

Professionals

- Attending workplace programs
- Attending Induction programs
- Attending staff training and development courses
- Undertaking research and development projects
- Web resources

Personal competencies represent a set of skills, attitudes and values that enable librarians to work efficiently; be good communicators; focus on continuing learning throughout their careers; demonstrate the value-added nature of their contributions; and survive in the new world of work. The following section highlights the major personal competencies of new era librarians.

- Committed to service excellence
- Seeks out challenges and seeks new opportunities both inside and outside the library
- Sees the big picture
- Creates an environment of mutual respect and trust
- Has effective communication skills
- Works well with others in a team
- Provides leadership
- Committed to life by learning and personal career planning
- Recognizes the value of professional networking and solidarity
- Have personal business skills and creates new opportunities.

Except professional and personal competencies, there is an abundance of potential roles for the librarian. Potential roles require careful and timely preparation. Preparedness is a key issue in repositioning ourselves for new roles which includes managerial skills and information technology skills. These are also needed for the 21st century librarians.

Managerial skills

For managerial skills, POSDCORB acronym coined by Gullick and Urwick (1937): Planning, Organizing, Staffing, Direction, Co-ordination, Reporting and Budgeting are relevant in today’s managerial world. These elements are representing managerial skills for LIS professionals. In Gulick’s own words, the elements of POSDCORB are as follows:
Planning: that is working out in broad outline the things that need to be done and the methods for doing them to accomplish the purpose set for the institute;

Organizing: that is the establishment of the formal structure of authority through which work subdivisions are arranged, defined, and co-ordinated for the defined objective;

Staffing, that is the whole personnel function of bringing in and training the staff and maintaining favourable conditions of work;

Directing, that is the continuous task of making decisions and embodying them in specific and general orders and instructions and serving as the leader of the enterprise;

Co-ordinating, that is the all important duty of interrelating the various parts of the work;

Reporting, that is keeping those to whom the executive is responsible informed as to what is going on, which thus includes keeping himself and his subordinates informed through records, research, and inspection;

Budgeting, with all that goes with budgeting in the form of planning, accounting and control.

Demonstrate the knowledge of vision, commitment and leadership.

Encourage team work and involvement by all staff.

Strive for cost effective utilization of all resources of the library.

Communicates the value of library and information services to decision makers.

Understands and uses effective team process skills to realize the objectives, mission and vision of the library.

Develops and implements policies and procedures for the efficient and effective operation of library functions.

Continually adjusts programs and services to respond to societal changes and service opportunities.

Other managerial skills are also needed for librarian like Negotiating skills, Stress Management, Time Management, Consumer Analysis skill – user need analysis, behavior analysis.

**Information Technology Skills**

LIS professional must have aware of emerging technologies. LIS professional must have the knowledge of

- Computer Hardware/Software and Networking
- Library Automation software
- Word Processing, graphics, multimedia, spreadsheets, Power Point for presentation
- Create and update online databases
- Design and update library websites
- Design and maintain digital library
- Internet searching tools
- Content management
- Scanning/Printing – troubleshooting
- Digitization and prevention
- Provide online services such as RSS for current awareness service, Instant messaging for reference services, Blog for discussion, SMS or e-mail for communication with the users.
- Technical professional skills like, Standards e.g., Z39.50 for information retrieval. It specifies a response protocol between client and server. Metadata standards e.g. Dublin Core, MARC, CCF
- E-resource management
- Information literacy skill can be defined as ability to recognize when information is needed and being able to locate, evaluate and use effectively the needed information.
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