



## Information management in the era of information and communication technology: Experience of librarians in Nigeria

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### Abstract

The study looked at “**Information management in the era of information and communication technology: experience of librarians in Nigeria**” the Information Management is an administrative process that include acquiring, validating, storing processing, and protecting required information/data to ensure the accessibility, reliability, and timeliness of data for information nation users across the world. The organizations, institutions libraries and the governments are increasingly recognizing Also study investigated the level of information technology adoption and the impact of information management, digital literacy and attitude on the information technology adoption by librarians in academic libraries, in Nigeria, the importance of information management, documentation, curation and preservation of research data. Information management activities ensure long-term value and utilization of research data for new analyses and replication of study finding. Also 10 (ten) Headings/section were drawn to guide the study. The benefit of information management to librarians, concept of information management, librarians needs of digital libraries, literature on experience and skills need to be acquired as librarian, role of librarians in information management, information use in libraries, benefit



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of using Barcode System in libraries, importance of information technology in library services, challenges of ICT based in information Management and library services, and the lastly is conclusions and recommendation.

### **Keywords:**

Information, Management, Information, Communication, Technology, Librarians.

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### **Introduction**

Information management begins with the creation and collection of data that is processed and analyzed into information. The next step is storage, sharing and archiving when more current data becomes available. This process ends with the destruction of information for different reasons, including security, confidentiality, cost and storage constraints.

The vast possibilities made available and the pace of changes brought about by Information and Communication Technology has a significant effect on librarianship. The use of multimedia devices that involve image, voice, text, graphics and data for educational purposes has become increasingly important, taking the advantages of the use of computer to overcome barriers of exposing students to have the wealth of experience beyond the classroom situations. Unlike before, information can now be disseminated to a wider community than by making education accessible to many people. With advances in ICT, electronic information in the form of electronic books, electronic journals, and the internet have launched the world into an information age. No institution or organization can still rely on only traditional printed information resource to perform effectively and efficiently. To librarians, ICT is a significant development that provides tools for managing the avalanche of information generated by modern society. Ebijuwa (2018) defined ICT as tools used for collection, processing, storage, transmission, and dissemination of information. Anyakoha, (2018). Noted that ICT is the electronic means of capturing, processing, storing and disseminating information. The commonwealth of learning (2017), Belta (2019) and Kale (2018) emphasised on instructional applications of ICT in education as an antecedent. From the earliest times, an educational interest in technology has always centred on the instructional application of such technology for improved teaching and learning process. Ijatuyi and Adebajo (2017) pointed out on the impact and usefulness of ICT on learning and teaching in sustainable development advised on the need for a well-equipped ICT centres in all educational institutions to enable them live up to their social and political responsibilities.

They further pointed out that:-

- Computer: are no longer just mathematical tools but essential management resources as well all may know, different operations can be handled more efficiently using computers; with the computer, such activities like information generation, processing, analysing, storage and communication for sustainable development could be achieved. And the greatest advantages of using computer in one word operations are speed, cost effectiveness and optimal utilization of available resources. Other computer accessories worthy of mentioning include Compact Disk Read Only Memory (CD-ROM) diskettes; flash-drive etc. and their uses are all encompassing.
- Internet: This has proven to be the most valuable vehicle for accelerated information flow. According to Ogbomo (2018), it is a network of computers that communicates with each other over telephone lines. The potentials of the internet like in the provision of global platform for information sharing among organizations and individuals have been wonderful.
- Electronic mail (E-mail) this is the most widely used resources of the Internet. It is provided for sending and receiving (messages) through electronic device, intro and inter organizational communication has been made faster and cheaper through this technology.
- World Wide Web (www) World Wide Web is also an internet – based resources. It is a utility (Hyper texts simply documents through key words in document or page). A visit to a website helps individuals to locate and produces information for pursuance of political or social activities and for business transactions.
- Globalization derived by ICT is having a phenomenal impact on acquisition of legal and other relevant learning, teaching and research materials in law libraries across the country. Through ICT lawyers and student can have access to current court proceedings cases and law reports anywhere, any time and in any form in the Nigeria. Nwokedi (2018).

Libraries have also created a website that facilitates access to their local resources outside the library. Patrons can now search on-line databases and access the library website remotely, independent of time and distance, thereby transforming the use of library materials and the way the library provides its services. New techniques for identifying, locating, accessing, transferring, analyzing, manipulating, comparing, and revising texts, images, and data have also been developed. This has a direct impact on the role of academic librarians in meeting the information needs of their patrons. Advancement in technology has made it possible for anyone with the necessary technology and skills to post anything on the Internet without independent review and evaluation. Academic libraries in specific have witnessed a surge in the number of computers and internet accessible work stations for patrons and library staff. Acquisition of technologies into the library should give preference to those that enhance access to digital content and capable of enhancing global visibility of local content. Information professionals must not only be aware, but they should be trained to get involved to efficiently and effectively discharge their duties. More library automation training should

be organized for staff to enable them to cope with the digital advancement and on how to aggregate online information techniques to diversify search, evaluate internet service providers and the technicalities supporting uploading and holding local material on the internet. Junior staff should also be released and sponsored to training irrespective to enable them to also meet the needs of patrons when on duty.

This is the most important component of ICT. It is a network of networks that performs the connectivity among the computers. The Internet provides the medium for communication using different online tools. Social media like Facebook, Twitter, Blogs, etc. have become the central focus for quickest information dissemination. Most of the libraries are using these social media for the promotion or marketing of their e-resources. Technology has a great contribution to the security of the library through computer after having been civilized various technological processes. The base of the digital library is computer and computer network because the reading material cannot be processed in the digital material without the computer and even no published books can be modified to digital form. ICT can be used for resource sharing among libraries and information centers. It provides a great prospect for sharing both the human and material resources of a library with other libraries. The role of technology is very much significant for cooperative acquisition, cooperative processing (cataloging and classification). ICT is used in various library housekeeping operations as well as for different library activities and services. The use of electronic gadgets such as computers, barcode scanners, and library management software helps to perform circulation routine operations most easily and quickly. After the invention of barcode technology, library transaction has become faster. Nowadays, for any type of communication, we depend on the internet, email, telephone, etc. These technologies are also used in the library for the day to day activities of the circulation. The following duties are performed in the circulation by using ICT. Ebijuwa (2018) defined ICT as tools used for collection, processing, storage, transmission, and dissemination of information. Anyakoha, (2015).Noted that ICT is the electronic means of capturing, processing, storing and disseminating information.

Arjun (2017) noted that ICT integration in education generally means technology-based teaching and learning process that closely relates to the utilization of learning technologies in libraries. Librarians in universities are innovative in their use of new information technologies to provide access to a range of multimedia sources. Today's libraries teach students the information handling skills to last a lifetime. Libraries organize collections and provide access and services that incorporate changes in teaching, learning, and information technologies. Libraries are established for the systematic collection, organization, preservation, and dissemination of knowledge and information. Man needs to preserve and maintain the valuable knowledge and information contained in the books and documents because we want to preserve our knowledge and wisdom for the coming generations. Libraries are an essential link in this communication between the past, present, and future. Libraries provide access to the information they need to work, play, learn, and govern. Libraries have been identified as one of the key elements for open access to information, which is crucial to educational development. Libraries often provide a place of silence for

studying. Most academic libraries are linked to other libraries in cooperative networks, enabling them to share scarce and little-used materials required for advanced research. Libraries in carrying out this role of education can provide necessary materials such as textbooks, journals, magazines, and exercise books related to the curriculum of the existing literacy institutions in the community are it conventional schools or adult classes. In this way, it has assisted in the campaign to make society a more literate one. Libraries are regarded as the people's university providing independent decision making. Libraries attempt to meet a wide varies of reader's needs, providing varied information resources such as textbooks, journals, literary books, and other publications.

The information has emerged as the prime in the 21st century. ICT has exerted a profound influence on traditional academic libraries. The use of computers for library operation avoids respectively jobs and saves a considerable amount of time, resources, and labor. It also speeds up technical processing and information services. ICT has been a means to bring quality services. In the present scenario, the library and information centers at a global level can provide access to;

- Online databases across the country and worldwide
- Comprehensive statistical databases and content page services
- Full-text information sources with keyword searching

### **Concept of information management to libraries**

“The information age (also known as the computer age, the digital age, or the new media age) is a historic period in the early 20th century that was characterized by rapid changes from traditional thematic industries that were originally brought into an economy through the industrial revolution. The beginning of the information age may be associated with the development of transistor technology, especially MOSFET (metal-oxide-semiconductor field-effect transistors), which revolutionized modern technology and became the basic building block of digital electronics in the information age.” (Wikipedia)

An information management system (IM) refers to any framework of software that facilitates the collection, storage, organization, and distribution of information. Information management encompasses a series of organizational activities about acquiring, storing, and distributing information to stakeholders. Information, in this case, is any detail that allows a business to make a decision. For example, the number of sales that a business records over a week. The information in question can be in different formats, including pictures, audio, and video. An excellent management system allows information to be accessed in a timely and accurate fashion so that key stakeholders can use it to make informed decisions about the business.

### **Features of an information management to libraries**

Generally, an IM can perform multiple functions. The core features of these systems are:

**Collection of information-:** This core feature involves gathering and measuring data on libraries activities. The data that libraries collect are typically in four categories which are:

- **Personal data:** Personal data includes every piece of information that allows a business to identify a customer. Examples of this type of data are name, address, and Social Insurance Number (SIN) in specific situations.
- **Engagement data:** Engagement data details the interaction between a library to libraries through various touch points. For example, the number of visits to a libraries' website, email opens and registered attendees at an event.
- **Behavioural data:** Behavioural data is generally any detail that contains a transaction between a client and a librariy. Examples include purchase histories and information about product usage.
- **Attitudinal data:** Attitudinal data includes metrics such as product desirability, product relevance, and users satisfaction.

A standard information management can easily collect these kinds of data, measure them, and present them back to libraries or librarians.

**Storage of information-:** Information storage is a feature that allows the IM to keep data and make it accessible to users. The system houses this data in a storage unit which can be either a hard drive or a server that contains a database. The system can also store data in cloud storage where it's accessible through the internet. Choosing to store information in the cloud over more traditional ways of storage, like paper or compact disks, allows you to better ensure the information's safety, quickly recover it if needed, and make it accessible globally.

**Processing of information-:** Information processing is any series of operations that produce results. Typically, this involves manipulating data to produce useful information. The data requires information transformation from one format or medium to another

**Distribution of information-:** Information distribution refers to all of the processes that an organization employs to deliver information to its stakeholders. Various stakeholders interact with this information in different ways. Some ensure its quality, accessibility, and utility, while others, like executives, use it for decision-making.

**Accessibility of information-:** Information accessibility refers to the ability of an IM to display data in a way that allows stakeholders to access the content. The content is generally available on an equal basis in a library, but this can be adjusted depending on different stakeholder categories.

### **Benefits of an information management to libraries**

Below are some of the benefits of a good information management

- **Supports decision-making:** An IM allows various stakeholders to have comprehensive business information which they can use to make decisions about their libraries.

- Increases efficiency and improves service delivery: When decisions are well-informed, it is easier to identify improvement areas in library operations. Different teams can then focus their efforts on these improvement areas, which may increase their productivity and improve the services they deliver to clients.
- Helps to achieve libraries goals: Proper information processing can help stakeholders better understand business goals and identify areas or opportunities where the libraries can improve.

## **Management information (MI)**

A management information (MI) is a data-driven field focusing on organizing businesses' data, analyzing it, and using it to inform decisions. An MI produces regular reports for every level of management within an organization, so their complexity can depend on the company's size. This system can coordinate, control, analyze, and visualize information to improve report generation efficiency and store it in an accessible manner. MIS studies typically encompass people, processes, and technology within an organizational context.

## **Evolution of MI**

Management information has evolved through different phases, including:

- Mainframes: Mainframes were large computers that allowed organization or libraries to perform processes requiring large volumes of data processing. They occupied entire rooms, relied on punch cards, and had operators who manually delivered reports of processed data to those requesting them.
- Minicomputers: The introduction of minicomputers replaced punch card operations with data entry through a computer terminal. This also allowed larger libraries to operate computing centres on-premises.
- Personal computers: With the development of personal computers, businesses were able to have MI-dedicated employees. While this was a cheap and efficient process, it required that the information needed for reports be present on each individual computer as each computer couldn't connect with others.
- Client/server networks: With increased technological complexity, employees wanted to share information amongst themselves quickly and efficiently. Client/server networks solved this by enabling multiple computers to connect to a shared network as a server while sharing data.
- Enterprise computing: The main features of this era were high-speed networks and the consolidation of information from various departments into software platforms. These software platforms or enterprise software made it easy for computers to gain access to all of a company's servers, further refining the information generation process.
- Cloud computing: Cloud computing is the accessibility of different services through the internet. It allows users who are not present on an organization's premises or directly connected to its private network, to access its servers.

## **Benefits of Information Management to Librarians**

- Quality of data
- Completeness
- Validity
- Reliability
- Accuracy
- Timeliness,
- Confidentiality, integrity and ethics of research.

### **Needs of Digital Library by librarians**

As a Librarians you have to know the Needs of digital libraries

- Information represented by a variety of digital objects.
- Geographically distributed digital information collections and users.
- Large and diverse collections.

### **Reviewed Related Literature on Experience and Skills Needsto be Acquired as Librarians:**

Bankside and Viswe (2017) in their study indicate “that the ICT literacy level of the library professionals working in university libraries in Maharashtra is satisfactory. Majority of library professionals has acquired the basic ICT literacy skills which are required to handle day to daylibrary operations, but still few library professionals need to enhance their literacy level in thearea of open source library automation software, digital library software, and institutional repository software, etc.” Another study by Kumar (2016) show that “LIS professionals serving in various engineering educational institutions of the Rayalaseema Region of Andhra Pradesh aremostly computer literate and have significant basic ICT skills to handle the library, still there isenough scope to develop their innovative ICT skills and to implement these skills in the libraryto provide new ICT-based library services.”

Employers want LIS professionals with wide range of ICT skills and competencies in addition totheir routine skills. Raju (2017) in his study discusses “IT knowledge and skills needed by academic librarians in the digital library environment. Result reveal that 70 to 75 per cent of job advertisements in the academic library sector emphasis advanced IT skills (Integrated librarysystem, advanced computer skills , digitization process , web design and development, IR, andtechnical skills which are repositories, digitization, and curation of research data and other digital content etc.) which librarian should possess. Librarians require IT knowledge and skills to asignificant extent in the academic library environment.”

Chanetsa and Ngulube (2019) in their study “indicated that respondents possessed core skills which include presentation and Information literacy course design skills, reference and research skills, including information and search retrieval skills. Over a third of respondents believe that they needed new skills which includes web design, online cataloguing, classification, knowledge of HTML, virtual reference and online chats, knowledge of the use of mobile technologies like cell – phones and tablet in education, knowledge of the



construction of subject portals into teaching, learning, research.” “Staff development is a significant issue in a changing library environment as well-equipped professional librarians are key resources to developing and maintaining a high-quality library” (Ajeemsha and Madhusudhan, 2016). While Ajeemsha and Madhusudhan (2017) in their Ph.D thesis “find out the effectiveness of training programmes for LIS semi-professionals and various aspects of continuous professional development (CPD) in Central University of South India. The result shows that most of the semi-professionals have a positive look on CPD activities and are satisfied with the effectiveness of the training programme particularly on- the - job training. In-house training will improve their job performance and prefer to develop new services from what they had learned”. Maceli and Burke (2016) in their study “indicates that respondents use email, word processing, web browser, the library catalog, and library database searching were the technology/skills that they regularly used in their job.” Various studies have mentioned the necessity of ICT skills for librarians. Hallam and Ellard (2017) study show that “digital literacy represents a fundamental Foundation skill needed by library staff”. Baro and Eze (2018) investigated “the level of ICT, information literacy (IL) skills of librarians in Nigerian Colleges of Education (COE) in order to discover the challenges they face in acquiring these skills. The findings showed that librarians in the study zone rate their Information Literacy skills as average.”

Another notable study by Nkamneben, et al. (2018) examined the "extent of ICT skills possessed by librarians in the universities in Anambra State, Nigeria. The findings reveal that Librarians in the universities in Anambra State are weakly skilled in ICTs. "Another study by Okafor (2017) examined the "relevance and adequacy of IT skills set in some Nigerian University in a digital environment. The result revealed that many of the respondents do have knowledge and skills of email use and word process task but lack knowledge of search engines and directories other than Google and Yahoo, respectively." Vijay kumar and Sweetey (2017) in their study report that “professionals have above average skills for ICT based information retrieval (accessing, searching and use of e-journals). The respondents also have an average level of skill in electronic document delivery and Inter library loan through a network, online Indexing and abstracting services Digital Reference services, Development of Institutional repository, SDI services, and electronic new additional alert.” Raju (2018) in his study emphasizes that “librarian must possess knowledge of digitization, metadata creation, and management, preservation of digital information and computer skills, which are necessary to work in online information environments”. Seenaa and Pillai (2018) assessed the “level of ICT skill among library professionals in Kerala University Library system. The analysis revealed that the library professionals in Kerala University library have relatively average level skill in various ICT related tasks in libraries. All the professionals expressed a positive attitude toward the application of ICT in libraries.” Selvanthony, et al., (2016) examined the “various skills of library professionals in Engineering Colleges to determine the level of skills like low, high and moderate among library professionals in Tamilnadu. The findings show that in all the categories of Library staff, found more in the moderate skills and found less in the high skills among Librarian, Assistant Librarian, and Library Assistant.” Sahu (2018) through survey has found that less number of respondents are having proficiency

in Technical and interpersonal skill, networking, XML language, and project management skill, which mostly needed for the librarian in this current environment.”

Thanuskodi (2018) conducted a study “to measure ICT Literacy among Library professionals in engineering college libraries of Tamil Nadu. The study found that a majority was skillful in computer fundamental and internet searching skills. Most of the respondents want training in library management software. Respondents had knowledge of different library software for library automation and different digital library software for developing digital libraries and they were also familiar with online searching tools.” Satpathy and Maharana (2017) assessed the “ICT skills of LIS professionals in Engineering Institutions of Orissa, India using digital technological tools in libraries. Their findings revealed that majority of LIS Professionals are computer literate and have sound knowledge of available ICT tools in Libraries.” Batool and Ameen (2016) “studied the status of technological competencies of librarians at Punjab University. Their findings revealed that all librarians had word processing skills but not very skillful in computer hardware expertise. Study further revealed that they knew how to use basic Internet functions but not advanced services, although they had expertise in using web Dewey, OPAC, and MARC records. The researchers pointed out that lack of coverage in the curriculum, lack of refresher courses, and lack of training workshops were major problems in learning of technology.” Safahieh and Asemi (2017) “observed that majority of librarians at Ispahan University, Iran did not have good computer skills. Though librarians had long experience, none of the librarians perceived their level of skills as very good.” Ademodi and Adepoju (2019) explored “computer skill and competence among librarians in Ondo and Ekiti States and the level of ICT implementation in libraries in the two states. Findings revealed that few librarians use computers to carry out library functions, which may suggest that their computer skill is impeded. The study also disclosed that only one-third of the respondents have received formal computer training”.

The authors commented: “most of the librarians are computer literate but the rate of computer skill and competence is low.

### **Roles of Librarian in information Management:**

1. To provide intellectual access to information in any format.
2. To evaluate available sources of information.
3. To organize & structure information.
4. To ensure the preservation of information.
5. Economic impact.
6. To provide specialized staff to offer instruction.

### **Information Technology used in Libraries**

Information technology is a broad term that covers all forms of technology used to create, store, exchange, and use information in different forms. It is a very important tool for knowledge management. Information Technology (IT) provides tools to support the management of explicit knowledge and also to support communities of practice. Since most

practical situations involve a combination of explicit and tacit knowledge, only an integrated set of information technology tools can provide effective and efficient support to knowledge management. Advancement of Information Technology (IT) and its applications in Libraries and Information Centers, the concept of document management has been changed to information management and again the entire situation of information management has started its change to knowledge management (KM). In academic library information acquisition, storage, management, and dissemination have been tremendously and positively affected by computer technology. All routine activities involved in collection development, readers services (circulation and reference services), serials management, and technical services are being accomplished by computer and related technology. Computer and IT applications have notable benefits to academic libraries. ICT tools and techniques, knowledge management systems, the internet, web resources, digital libraries have made an important change in the existing library systems and services.

The academic libraries play a prominent role in providing information services in various forms to researchers, scientist, policy makers, planners etc. he went further to state that a well-organized academic library should have ICT to assist both patrons and Thus, today's library information systems is comprised of software systems capable of capturing, transmitting, storing, retrieving, manipulating, and displaying of information, that support the personnel, organizations, or other software systems.

1. Library Management system is software which helps in maintaining records of all library items. A library management system is also known as automated library system which keeps track of every book issued, returned and added to library. Various types of modules are used in library management system for smooth functioning of the system.

2. Barcodes are used in libraries to label books, magazines, CD & DVDs. Each and every book and other items are assigned unique 12- digit barcodes. It contains all information about the product. In Library Management system, whenever a student return or issue a book the system fetch the Barcode number and we can make entry of book in computer systematically. Library Management system helps in systematic management of books.

### **Tools Used in Barcode System**

- Labels
- Scanner
- Printer

### **Benefits of using Barcode system are:**

- Improved inventory management
- Faster check-in and check-out facility
- Easy to sort books
- Reduced staff workload
- Increase accuracy and efficiency

- Improve circulation capabilities.

3. Radio frequency identification (RFID) use electromagnetic fields to automatically identify and track tags attached to books. There are several ways of identifying tags but the most common is to store a serial number. The chip and antenna attached together are called an RFID tag. The RFID reader or scanner converts the RFID tag information into digital information which will further seen in computer and stored for future use.

### **Tools used in RFID**

- RFID Tag
- RFID Reader
- RFID Gate
- RFID Cards
- Self-Issuing Kiosk
- Drop Box
- Handheld header

### **Benefits of RFID in LMS:**

- Scanning made easy with tags
- Faster check-in and check-out facility
- Easy to maintain inventory through wireless system
- Increase accuracy and efficiency

The above information will help in understanding the new technologies used in **Library Management Software**.

### **Importance of IT in library Services**

1. Help researchers for effective literature review search needs.
2. To introduce and provide new services, revitalize the existing services by providing faster access to the resources, by overcoming the space and time barriers.
3. The Online Public Access Catalogue (OPAC) is the computer form of assisting library users to catalogue library materials.
4. To provide need-based, (tailor made), browsing and retrospective search services to the users.
5. To have large number of databases in CDs.
6. Computers have aided libraries with digital library which occupies little space but large storage capacity.
7. To utilize the staff for providing better information services
8. To develop/upgrade the abilities of professionals
9. Information is preserved, conserved over a long period of time without image or quality degradation.
10. To encourage networking and resource sharing at local level
11. Placing orders, checking to avoid duplication of books, price, ordering etc. are done very effectively using ICT technique

12. To have access to a number of national and international journals which are being published only in machine readable form
13. To digitize the documents for preservation and for space saving
14. To capture, store, manipulate, and distribute information
15. To improve the efficiency of library functions
16. To improve the cost effectiveness of library operations.
17. To support library functions such as circulation, serials control, acquisition control, stock maintenance and other routine office works and developing in-house database.
18. To access library catalogues databases of other libraries through library networks
19. Global integration of library services.

### **Information Management and Information Communication Technology**

Information management skills comprise the competencies and efficacy to control and use information in various formats to improve the organizations. It relies on the creation and dissemination of appropriate information to various categories of users. Digital literacy skills are very vital in the present-day library and information services. It is the ability to “locate, consume, create and communicate digital content” (Spires & Bartlett, 2017). Attitude is a psychological factor which shapes someone’s opinion about an object, system or person. It relates to the librarian’s feelings and perceptions about the use of information technology in the library. Studies have highlighted the role of attitude in technology acceptance (Clifford, & Zaccus, 2017; Alharthi, 2019; Madu, Haruna, & Rajapakse, 2019). Hence, it becomes important to understand the contribution of these factors to IT Adoption by Librarians in Nigeria.

ICT advancements have gradually decreased the price of organizing data and facilitating people and organizations to engage in substantially more information-related duties efficiently. The usage of ICT is therefore necessary for libraries and information centers to stay functional and effective in the modern world. Clients can only receive satisfactory responses to their questions in the lowest amount of time and librarians can carry out their duties more effectively when they have adopted ICT.

ICT has impacted every sphere of academic library activity especially in the form of library collection development strategies. ICT presents an opportunity to provide value-added information services and access to a wide variety of digital-based information resources to their clients. Furthermore, academic libraries are also using modern ICTs to automate their core functions, implement efficient and effective library cooperation and resource sharing networks, implement management information systems, develop institutional repositories of digital local contents, and digital libraries. Information and Communication Technology (ICT) has brought unprecedented changes and transformation to academic library and information services, conventional LIS such as OPAC, users services, reference services, bibliographic services, current awareness services, Document delivery, interlibrary loan, Audiovisual services, and customer relations can be provided more efficiently and effectively using ICT, as they offer convenient time, place, cost-effectiveness, faster and most-up-to-date

dissemination and end-users involvement in the library and information services process. The impact of ICT is characterized by information services by changes in format, contents, and method of production and content and method of production and delivery of information products. Modern information and communication technology have created a global village because of the information revolution and the consequent computer based messaging system, and electronic networks for access to information and library services. ICT is a growing phenomenon in society. The library is a dynamic and evolving enterprise in education. Libraries have been transformed into information centers. Formal tools and techniques have been replaced by modern technologies. Information and communication technology has become an integral part of modern libraries. Databases are replacing the huge amounts of inventories. Resource sharing has become a requirement and is easier through modern techniques. To meet the information need of users, academic libraries provide various services such as user education (orientation/instruction services), interlibrary loan/connection services, abstracting and indexing services, referral services, and circulation services. Other services provided include library book loans, reference services, photocopying, online services, a compilation of reading lists and bibliographies, e-mail, internet connectivity, CD, Researching, and publishing.

In libraries, information technology has assisted library professionals to provide value-added quality information service and give more remote access to the inter-nationally available information resources. Today's highly sophisticated information technology to facilitate the storage of huge amounts of data or information in a very compact space. Information technologies promise fast retrieval of stored information and revolutionize our concept of the functions of a traditional library and a modern information center. Recently technological developments have dramatically changed the mode of library operations and service

### **Challenges of ICT-based in Information Management and Library Services**

1. **High Costs of ICT Infrastructure:** Acquiring and maintaining ICT infrastructure such as hardware, software, and other equipment can be expensive. This can be a significant challenge for small libraries as they may not have the budget to invest in the latest technology. Upgrading technology to meet the demands of the latest software and online resources may also be expensive. Additionally, ICT hardware and software require regular maintenance, which can be costly.
2. **Digital Divide:** ICT-based libraries face the challenge of ensuring all patrons have equal access to technology. Not everyone has access to digital resources such as computers, smartphones, or the internet, creating a disadvantage for those without access. This can be a particular problem for rural areas where there may not be reliable internet connections.
3. **Staff Training:** Implementing ICT in libraries requires training to ensure they are equipped with the skills to use and manage ICT resources effectively. Libraries must invest in training programs for their staff to ensure they have the necessary skills to

manage and support ICT infrastructure. Staff also need to be trained on how to use ICT to provide better services to patrons.

4. **Security and Privacy:** ICT-based libraries collect and store sensitive information, such as patron records and financial data, making them a prime target for cybercriminals. Libraries need to ensure adequate security measures to protect their digital resources from cyber threats such as malware, viruses, and hacking attempts. They also need to ensure that patron information is secure and private.
5. **Keeping Up with Technological Advances:** Technological advances are rapid, and keeping up with them can be challenging for libraries. New software and online resources are released daily, and libraries must keep up with these advances to remain relevant. Keeping up with technological advances can be expensive and time-consuming.
6. **Changing Role of Libraries and Librarians:** The role of libraries and librarians has evolved with the implementation of ICT. Libraries are no longer places to borrow books; they are now digital hubs that provide access to a wide range of resources and services. Librarians must also adapt to this change, developing new skills to manage and support ICT infrastructure and provide better services to patrons.
7. **Funding of Libraries:** Acquiring and maintaining ICT infrastructure can be expensive, and libraries may struggle to secure funding to keep up with technological advances. Libraries need adequate funding to purchase and maintain hardware, software, and other equipment. Inadequate funding may lead to a lack of access to digital resources and services for patrons.
8. **Copyright Management and Intellectual Property Rights:** Digital resources are subject to copyright and intellectual property laws, which can be complex and challenging to navigate. Libraries need to ensure that they comply with these laws and have appropriate systems to manage digital resources effectively. They must also educate patrons on copyright laws and intellectual property rights to avoid infringement.
9. **Preservation of Digital Information Resources:** Digital resources are susceptible to loss or corruption, and libraries must ensure adequate preservation strategies. Libraries must develop policies and procedures for preserving digital resources, including backup and disaster recovery plans, to ensure they remain accessible to patrons.
10. **Legal Deposit:** Legal deposit requires libraries to acquire a copy of every publication published in their jurisdiction. In the digital age, this requirement has expanded to include digital publications. Libraries must ensure that they comply with legal deposit requirements, including acquiring and preserving digital publications.

## Conclusion

Technologies are created, subsequently; there is the need to develop our skills and capacity to provide improved library services. Library resources must be utilized at a large amount. It is inescapable for the library professionals to be updated with the technology for their existence. ICT to improve their teaching methods and approach is desired to promote effective learning as well as to meet the demand of the 21st century teaching skills. Information and Communication Technology (ICT) has brought phenomenal changes and transformation to academic library and information services, conventional LIS such as OPAC, user's services, reference services, bibliographic services, current awareness services, Document delivery, interlibrary loan, Audiovisual services, and customer relations can be provided more efficiently and effectively using ICT.

## Recommendations

Based on the challenges that face librarians in information management and ICT processes, the following recommendations are made:

1. Reassign the existing staff to new roles with appropriate training.
2. Networking should be improved for the services of librarians.
3. the librarians or the management should make provisions for the establishment of well-defined of Information Management and ICT facilities policies and strategies for academic libraries.
4. Workshops and sensitization workshops should be organizing for professional librarians in order to address the misconceptions of IM and ICT among them.
5. Libraries should embark on complete digitization of their collections to pave ways for proper collaborations that will facilitate IM and ICT practices for effective service delivery.
6. Libraries should be provided with IM technology tools such as groupware and content management systems that will facilitate IM and ICT practices in academic libraries.
7. In order to guarantee a consistent power supply for proper exploitation of ICT facilities, a standby electric power producing equipment should be purchased and be uncuttable

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