Use Of Information Communication Technology (Ict) In Library: An Overview

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Abstract: This paper explores the multifaceted dimensions of Information and Communication Technology (ICT) in modern library operations. It emphasizes the importance of understanding and adopting ICT tools to deliver enhanced library services and efficient information access to users. The study highlights key areas where ICT can be effectively applied, including library automation, digital resource management, and user-centered services. Advanced technologies such as Remote Access (RemoteXs), RFID systems, and QR codes are examined for their role in streamlining operations and improving service delivery. Additionally, the paper discusses the significance of institutional repositories as sustainable platforms for archiving and disseminating scholarly resources. The overarching aim of this study is to demonstrate how ICT empowers libraries to provide quicker, more reliable, and user-friendly information services, ultimately transforming libraries into dynamic knowledge hubs for academic and research communities.

Keywords:

• Information Communication Technology (ICT) • Housekeeping Operation • Library Service • Library Automation • Library Operation• QR Code• RFID Technology• Social Media• Digital Libraries• E-Resources• Online Public Access Catalogue (OPAC) • Integrated Library Management System (ILMS)• Database Management• Knowledge Management • Virtual Library• Institutional Repository• Cloud Computing in Libraries • Mobile Technology in Libraries • Library Networking • User Awareness Programs• E-learning Support • Open Access Resources • Electronic Journals • Electronic Books (e-books) • Library Consortia • Multimedia Resources • Web-based Services• Library Portals • Digital Preservation • Information Retrieval System • Cyber Security in Libraries• Artificial Intelligence in Libraries • Big Data and Libraries• Data Mining in Libraries• Library 2.0 / Web 2.0 • Smart Libraries • User-centric Services.

I. Introduction

Libraries have always been regarded as the backbone of knowledge dissemination, entrusted with vital activities such as **collection development, reference service management, document delivery, and providing organized access to vast information resources** (Husain & Nazim, 2015; Cholin, 2005; Malhan, 2006). With the exponential growth of information, managing huge collections has become increasingly complex, and here **Information and Communication Technology (ICT)** plays a transformative role. The integration of modern technology is no longer a choice but a necessity, enabling libraries to deliver **faster, smarter, and more user-centric services**.

Today's library users represent a **digitally native generation**, well-versed with technology and accustomed to seamless access to information in every sphere of life (Thomas & McDonald, 2005). For them, the library experience must be quick, reliable, and technologically advanced. The success of a library, therefore, depends not only on the richness of its collection but also on the **satisfaction and**

convenience of its users. In the present scenario, the **World Wide Web and internet-based tools** provide the most effective means to deliver information "to the right users, at the right time, from anywhere, and in the right way" (Fischer, 2012).

Over the past few decades, libraries have undergone a **paradigm shift** with the advent of ICT. Tasks that were once manual and time-consuming are now handled with remarkable **speed, accuracy, and efficiency**. ICT has not only streamlined housekeeping operations such as cataloguing and circulation but also expanded the scope of services to include **Online Public Access Catalogues (OPACs), library databases, automated circulation systems, and remote access to digital resources**. This has transformed traditional libraries into **dynamic knowledge centers**, where librarians act as **information consultants and knowledge managers** (Sampath Kumar & Biradar, 2010).

Moreover, the application of ICT has allowed libraries to offer **value-added services** and facilitate access to a wide spectrum of **digital and electronic information resources** (Ghuloum, 2012). Beyond efficiency and cost reduction, ICT has empowered libraries to enhance service quality and enrich the **overall user experience** (Law, Leung, & Buhalis, 2009). Clearly, the role of ICT in academic libraries is not just operational but **strategic**, ensuring that libraries remain relevant and indispensable in the rapidly evolving information society.

II. Literature Review

The rapid development of Information Technology (IT) has significantly transformed library and information systems. Beyond expanding the ability to access, store, and process information, IT has redefined the very concept, organization, functioning, and management of libraries (Peyala, 2011). The IT revolution has facilitated advanced mechanisms for information discovery and retrieval, while simultaneously improving managerial efficiency and enabling libraries to respond more effectively to evolving user needs (López, Peón, & Ordás, 2009). Furthermore, ICT applications support knowledge creation, storage, transfer, and utilization, thereby strengthening both tacit and explicit knowledge management practices (Okumus, 2013).

Buarki, Hepworth, and Murray (2011), in their comprehensive review of ICT skills and employability requirements within LIS education in Kuwait, underscored the indispensable role of ICT competencies in professional practice. Their findings revealed that ICT proficiency has become a prerequisite for LIS graduates, aligning academic curricula with labor market expectations. The study illustrates that ICT is not only a functional tool for library operations but also a determinant of employability and career progression in the information profession.

The contribution of ICT to academic libraries has also been extensively documented. Anunobi and Edoka (2010) emphasized that university libraries, as core information providers, are central to teaching, learning, and research. They highlighted the crucial role of serials and periodicals for faculty and researchers, noting that ICT has streamlined acquisition, organization, and retrieval processes. Importantly, ICT has facilitated the transition from print to electronic resources, reshaping user preferences and expanding access to scholarly information.

Haneefa's (2007) investigation of ICT adoption in special libraries in Kerala, India, revealed cataloguing as the most common domain for automation. However, the study identified inadequate ICT infrastructure as a persistent barrier, leading to user dissatisfaction. The findings suggest that sustainable investments in infrastructure and enhanced automation are essential for maximizing ICT's potential in libraries.

Chandrakar and Arora (2010) further advanced the discussion by exploring ICT-enabled copy cataloguing in India. They emphasized the significance of utilizing trusted bibliographic sources such as IndCat and the Library of Congress catalogue. Such practices not only enhance cataloguing efficiency but also promote standardization and resource sharing among libraries.

Taken together, the literature demonstrates that ICT has become integral to the modernization of libraries. It enhances efficiency in technical processes, improves access to diverse resources, and strengthens user-centered service delivery. Nevertheless, the success of ICT implementation is contingent upon the availability of adequate infrastructure, continuous staff training, and sustainable financial investment. An enabling ICT environment, therefore, is essential for libraries to remain relevant, efficient, and responsive in the digital era.

III. Objectives

The present study is undertaken with the following objectives:

- **To enhance awareness of ICT in library operations** – to highlight how ICT can accelerate day-to-day library functions, minimize delays, and ensure quick access to information resources.
- **To guide library professionals in housekeeping operations** – to demonstrate how ICT applications such as automated circulation, acquisition, serial control, and cataloguing can streamline routine workflows and reduce manual effort.
- **To explore ICT tools for cataloguing and classification** – to provide a structured pathway for understanding and applying modern ICT features, including web-based cataloguing standards, metadata management, and digital classification systems.
- **To promote the use of OPAC and Web OPAC** – to create awareness among both library professionals and end-users about how Online Public Access Catalogues and Web OPACs serve as integrated search platforms, improving resource discovery and user satisfaction.

IV. Use of ICT Tools

The emergence of the information revolution, powered by information and communication technology (ICT), has transformed the way libraries deliver their services. ICT has enabled libraries to adopt efficient strategies for effective information management, dissemination, and user engagement (Igwe, 2010). Libraries today employ a wide range of ICT tools to enhance communication, remote access, and outreach.

The following are the major categories of ICT tools widely applied in libraries:

4.1 Communication Technologies

Communication technologies play a crucial role in enabling real-time interaction and effective exchange of information between libraries and their users. These tools support both formal and informal communication for academic and research purposes.

- **Email**: The most widely used formal communication tool, email allows rapid exchange of messages, documents, images, audio files, and program files across the globe within seconds. Libraries use email for circulation-related notices (such as reminders for renewal or return of books), dissemination of updates, and delivering requested information promptly.
- **Voice Mail**: A modern alternative to email, voice mail enables the sending and receiving of spoken messages instantly. This is particularly useful when written communication is not feasible or urgent clarification is required.
- **Telephone**: A traditional but effective medium, telephones are still used by libraries for direct interaction with users, responding to queries about resource availability, room bookings, and scheduling appointments for research consultations.
- **Fax**: Fax technology, though less common today, remains relevant in certain contexts. It allows the telephonic transmission of scanned text and images, often used by libraries for official correspondence, vendor communication, and document sharing (Rouse, 2006)
- **Video Conferencing**: Defined as "a means to conduct a conference between two or more participants at different sites by transmitting audio and video data" (Beal, n.d.), video conferencing is a powerful tool for remote user orientation, online workshops, training sessions, and collaboration with partner institutions. It is particularly valuable for students participating in exchange programs or distance learning.

- **Internet**: Often considered the backbone of modern ICT, the internet connects networks globally and provides libraries with access to a wide range of online communication tools. It enables email, instant messaging, VoIP, and social media platforms, facilitating both synchronous and asynchronous communication between libraries and their stakeholders.

4.2 Remote Access and Control Technologies

Remote technologies empower libraries to extend services beyond physical boundaries, enabling users to access resources and support anytime, anywhere.

- **Remote Control Tools**: Platforms such as *TeamViewer* allow librarians to manage systems, conduct online meetings, provide desktop sharing, and transfer files remotely. These are particularly useful for troubleshooting user issues and conducting staff training.
- **RemoteXs Technology**: Developed by Eclat Engineering Pvt. Ltd., RemoteXs is a secure, single-window platform for accessing subscribed e-resources, including e-journals, e-books, and institutional digital content. It allows off-campus access to resources, making it invaluable for researchers, faculty, and students working remotely. RemoteXs not only enhances research productivity but also supports the creation of institutional knowledge bases.

4.3 Social Media Tools

Social media platforms have become indispensable for libraries in promoting resources, engaging with users, and disseminating information quickly.

- **Face book**: Widely adopted by libraries for sharing updates, events, and e-resources. Face book Live is particularly effective for broadcasting ongoing programs, orientations, and workshops.
- **Twitter (X)**: Used for micro-communication, libraries employ Twitter to provide real-time updates, service announcements, and links to digital resources.
- **Blogs**: Blogs serve as dynamic tools for disseminating short communications, reviews, tutorials, and guides on library services. They foster interactive learning and allow libraries to share curate content effectively.
- **YouTube and Multimedia Platforms**: Increasingly, libraries use YouTube to upload tutorials, recorded lectures, and digital literacy programs, ensuring wider outreach and long-term accessibility.

V. Library Security:

The technology has a great contribution in the security of library through computer after having been civilized various technological processes. It can provide great security for the reading material of the library. This security arrangements provided by applying RFID technique.

5.1 RFID Technology

Technology has made a significant contribution to strengthening the security of libraries through computerized systems and advanced technological processes. Among these, Radio Frequency Identification (RFID) **has emerged as one of the most effective tools for enhancing library security and service delivery.**

RFID technology uses radio waves to automatically identify and track tags attached to library materials such as books, journals, and other resources. These tags contain electronically stored information that can be read by RFID readers without requiring direct line-of-sight, unlike traditional barcodes. This feature allows for **faster check-in and check-out processes**, enabling libraries to provide seamless, user-friendly services. The adoption of RFID technology not only safeguards library collections against

theft and unauthorized removal but also improves efficiency in **inventory management, shelf-reading, and material tracking**. By automating these operations, RFID aligns with Ranganathan's **fourth law of library science ("Save the time of the user")**, offering quick and reliable services to both staff and patrons. Today, many modern libraries worldwide are implementing RFID to ensure an enriched and secure library experience.

5.2 Closed-Circuit Television (CCTV)

Another important security technology in libraries is **Closed-Circuit Television (CCTV)**, also referred to as video surveillance. CCTV systems enable real-time monitoring and recording of activities within the library premises, serving as both a **preventive and supervisory measure** (Kumar & Svensson, 2015). Through strategically placed cameras, librarians and administrators can monitor user behavior, staff performance, and the overall functioning of the library. CCTV helps to **deter theft, vandalism, and unauthorized access** to restricted areas, thereby protecting valuable resources and infrastructure. Moreover, recorded footage provides essential evidence in case of disputes or incidents, ensuring accountability and transparency. Beyond security, CCTV systems also support **space management and user flow analysis**, helping library authorities make data-driven decisions regarding seating arrangements, study zones, and traffic congestion within the premises. Thus, CCTV technology not only enhances the safety of library resources but also contributes to effective library management.

VI. Quick Response (QR) Code Technology:

Walsh (2009) highlighted the versatility of **Quick Response (QR) codes**, noting that they can be used to encode a wide range of data types when accessed via mobile devices. These include plain text, uniform resource locators (URLs), phone numbers (which can prompt a call), text messages (initiating an SMS), and digital contact information in the form of a vCard. Among these applications, QR readers work most reliably with text and URL options, particularly since some providers also offer hosting services. In such hosted solutions, QR codes link to a redirection service, enabling the tracking and analysis of traffic generated by a specific code. This feature provides valuable insights for institutions seeking to measure user engagement.

Expanding on this, Xu (2014) explained that the process of generating QR codes is straightforward due to the availability of numerous free online tools, including **Kaywa, Qrstuff, Goqr, Qurify, Delivr, and Invx**. Technology giants such as Google have also simplified the process by integrating QR creation into their services. For instance, **Google URL Shortener** not only condensed lengthy URLs but also automatically generated an accompanying QR code that could be downloaded by appending ".qr" to the shortened link. Similarly, the **Google Chrome QR Code extension** enabled users to generate QR codes directly from webpages. While some platforms, such as Qrstuff, support batch creation of QR codes, they often require a subscription for advanced features.

In the context of libraries, QR code technology has become **indispensable for quick and seamless access to digital resources**. Libraries can integrate QR codes into catalogs, reading lists, journals, e-books, and institutional repositories, enabling users to retrieve information instantly with their smartphones. Beyond resource retrieval, QR codes also support innovative services such as virtual library tours, instructional videos, mobile OPAC (Online Public Access Catalogue) access, and event promotions. Their cost-effectiveness, ease of generation, and adaptability make QR codes a vital tool for modern library operations, bridging the gap between physical and digital information environments.

VII. Digital Library:

The foundation of a digital library lies in computers and computer networks, as digital resources cannot be created, processed, or accessed without them. Printed or manuscript-based works must first be digitized to make them available in electronic formats. In digital libraries, all reading and reference materials—such as PDF documents, HTML resources, e-books, audio recordings, video lectures, and interactive services—depend heavily on computing infrastructure and reliable networking systems.

Archiving, Preservation, and Digital Repository One of the critical challenges for libraries is the **preservation and archiving of manuscripts, rare collections, and ancient documents** to ensure their availability for future generations. Traditional preservation methods are insufficient, but through the use of modern technologies such as high-resolution scanners, optical character recognition (OCR), and advanced storage devices, libraries can convert these valuable resources into digital formats. Once digitized, they can be securely stored on various media, including computer hard drives, cloud storage, CD-ROMs, and DVDs.

A **digital repository** serves as a structured and managed environment for the long-term storage, organization, and retrieval of digital objects—ranging from documents and images to multimedia content. These repositories not only preserve the intellectual assets of an institution but also facilitate **global accessibility, resource sharing, and scholarly communication**. Repository software typically incorporates metadata management tools, indexing mechanisms, and user interfaces to ensure discoverability and usability of the stored resources.

Today, a wide variety of digital repository platforms are available to cater to the diverse information needs of academic, research, and public communities. Notable examples include:

- **DSpace** – Widely adopted by academic institutions for building institutional repositories due to its **user-friendly workflow, scalability, and strong support for metadata standards**.
- **EPrints** – Popular in the research community, providing robust features for archiving scholarly publications and research outputs.
- **Greenstone** – An open-source digital library software particularly effective in managing multimedia collections and supporting multilingual content.

Among these, **DSpace has emerged as the most popular institutional repository software**, offering a reliable platform for archiving digital content and ensuring interoperability with international standards such as OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting). Through institutional repositories, the academic and research community benefits from **greater visibility of scholarly work, open access to knowledge, and enhanced opportunities for collaborative learning and innovation**.

VIII. Resource Sharing:

Information and Communication Technology (ICT) has transformed the concept of resource sharing among libraries and information centres, enabling them to transcend geographical, financial, and infrastructural limitations. Through ICT, libraries can share both human and material resources effectively, thereby maximizing access to knowledge while minimizing duplication of efforts and costs.

ICT facilitates **cooperative acquisition** of resources, allowing libraries to jointly subscribe to costly databases, journals, and e-resources. It also enables **cooperative processing activities** such as cataloguing and classification through shared bibliographic databases and union catalogues, ensuring standardization and reducing redundancy in technical services

Moreover, ICT supports the **exchange of information materials**, particularly digital content, which can be disseminated swiftly across networks through library consortia and digital repositories. Collaborative initiatives also extend to **joint publications, digital library networks, and shared digital platforms**, which enhance the visibility and accessibility of scholarly works. In addition to material resources, ICT strengthens the sharing of **human expertise**. Libraries can conduct **joint training programmes, staff**

development initiatives, workshops, and seminars, often delivered via online platforms, thus building the professional capacity of library personnel.

Furthermore, the possibility of **staff exchange programmes** enriches professional exposure and fosters knowledge transfer across institutions. Overall, ICT-enabled resource sharing not only ensures **cost-effectiveness and wider accessibility** but also promotes **collaborative growth, innovation, and equitable knowledge dissemination** in the library and information science domain (Igwe, 2010).

IX. Use of Library Automation Software:

Library automation is an effective means of reducing human intervention in routine library services while enhancing efficiency, accuracy, and user satisfaction. The primary aim of automation technology is to deliver **maximum services in minimum time at the lowest possible cost**. In simple terms, library automation refers to the application of Information and Communication Technologies (ICTs) in library operations and services.

Several library automation software packages are available today—such as **Libsys, Koha, SLIM21, and NewGenLib**—which support the complete range of library functions, including **acquisition, cataloguing, classification, circulation, serials control, and stock verification**. The adoption of ICT-based automation tools has transformed traditional manual practices into streamlined, user-friendly processes. The major areas of application are outlined below:

9.1 Acquisition

Acquisition, the process of developing a library's collection, has become highly simplified through ICT integration.

- **Online ordering and duplication checking**: Orders for books and journals can be placed directly through publishers' or vendors' websites (e.g., Amazon, Flipkart, Infibeam), minimizing delays.
- **Price verification and invoicing**: Price comparison is instantly possible across platforms, and invoices can be downloaded electronically, avoiding postal delays.
- **Communication**: Email and online forms allow libraries to send reminders, place bulk orders, and acknowledge receipts efficiently.
- **User demand management**: Online suggestion portals enable users to recommend titles, making acquisition more demand-driven (Antherjanam & Sheeja, 2008).

9.2 Cataloguing

Cataloguing ensures systematic organization of library resources, making them accessible to users. ICT has revolutionized this process by enabling:

- **Shared cataloguing**: Libraries can import bibliographic data from international databases such as **OCLC WorldCat, Library of Congress Online Catalogue, and Trove (National Library of Australia)**.
- **Metadata standards**: Formats like **MARC21** make bibliographic data exchange seamless across systems.
- **Time-saving practices**: Ready bibliographic records can be imported, with fields edited to suit local requirements, thus drastically reducing workload (Adeleke & Olorunsola, 2010).

- **User updates**: Automated reminders notify users when newly processed books or requested materials become available.

9.3 Classification

ICT tools have streamlined the task of classifying resources into subject categories.

- **Online catalogues and tools**: Resources like **OCLC Classify, Library of Congress Classification Web, and WebDewey** provide accurate classification numbers for books and materials.
- **International standards**: Records from **British Library, Trove, and LC Online Catalogue** can be accessed and adapted, ensuring uniformity and saving time.

9.4 Serials Control

Serials and periodicals remain vital for current awareness services. Automation software enables libraries to:

- Track **current holdings** and subscription status.
- Identify and trace **missing issues**.
- Prepare **budgets and subscription lists**.
- Communicate with publishers/vendors through email and online letters.
- Manage **electronic journals** and e-magazines.
- Generate **new arrivals lists** for user awareness

9.5 Circulation

Circulation is the most visible library service for users, and automation has made it faster and more reliable.

- **Barcode and RFID integration**: Automated check-in/check-out of resources reduces errors and saves time.
- **Routine functions**: Issue, return, renewal, and reservation of books are managed seamlessly.
- **Overdue management**: Software generates automatic email/SMS reminders for overdue items.
- **Membership management**: New registrations, ID creation, and user record updates are managed digitally.
- **Statistics and reporting**: Daily circulation reports and usage patterns can be generated instantly.

9.6 Stock Verification

Stock verification, once a time-consuming manual task, is now simplified using automation.

- **Scanning with RFID/barcode readers**: Physical stock is compared against records in the automation database.
- **Error detection**: Missing, misplaced, or lost books can be identified quickly.
- **Inventory control**: Reports generated help in replacement, weeding, or auditing processes.

The use of library automation software has not only reduced repetitive manual work but also improved accuracy, transparency, and accountability in library operations. By leveraging ICT, libraries are able to offer enhanced user-oriented services, ensure faster access to resources, and maintain well-organized collections in line with global standards.

X. ICT and Library Services:

Information and Communication Technology (ICT) has transformed the traditional functioning of libraries into more efficient, accessible, and user-friendly knowledge centers. ICT-based services enhance the speed, accuracy, and quality of library operations while ensuring that users can access information resources anytime and anywhere.

The following services are commonly rendered through ICT in modern libraries:

10.1 On-Line Public Access Catalogue (OPAC)

ICT has revolutionized cataloguing practices. With OPAC, users can instantly access the holdings of a library collection, including books, journals, e-resources, and other materials. It significantly reduces the cost and effort of maintaining manual catalogues, eliminates paperwork, and enables the preparation of union catalogues across multiple institutions. Modern OPAC systems also provide value-added features such as:

- Display of *new arrivals* and *recent additions*.
- Advanced search options (author, title, subject, keyword, ISBN).
- Hyperlinking to e-resources and digital copies where available.
- Remote access through web portals and mobile applications.

10.2 Reference and Interlibrary Loan (ILL) Services

Reference services have become dynamic with the use of computers and the internet. Libraries now use digital tools and online resources to provide quick and accurate responses to users' queries. Resources such as encyclopedias, directories, dictionaries, databases, online catalogues, maps, biographies, patents, and e-journals are readily accessible.

Role of ICT in Reference Services:

- Library staff can answer user queries via email, online chat, or virtual reference desks.
- Ready reference is supported by electronic resources, search engines, and digital databases.
- Interlibrary loan services allow users to access books, articles, and other resources from partner institutions.
- Online communication tools (email, telephone, video conferencing) make resource sharing seamless.

10.3 Reprographic Services

Reprography involves the reproduction of library documents using technology such as scanners, photocopiers, and digital printers. ICT has enhanced this service by enabling:

- Quick photocopying of selected book pages, journal articles, and reports.
- Digital scanning and conversion of print materials into electronic format.
- Easy document sharing in soft copy through email or cloud platforms.

This ensures that users have affordable and convenient access to essential study material without compromising copyright regulations.

10.4 Selective Dissemination of Information (SDI) Services

As defined by Hensley (1963), SDI uses computers to match new information resources with users' specific areas of interest. ICT makes this process highly efficient by:

- Creating detailed user profiles and research interest databases.
- Continuously scanning online resources, e-journals, and databases for relevant content.
- Delivering personalized information alerts through email, RSS feeds, or mobile notifications.

This helps researchers and professionals stay updated with the latest developments in their fields.

10.5 Document Delivery Service (DDS)

Due to financial and logistical constraints, libraries cannot acquire every published resource. ICT-based Document Delivery Services bridge this gap by:

- Digitizing and sharing required resources electronically.
- Delivering documents such as journal articles, book chapters, or reports directly to users via email or secured library portals.
- Facilitating resource exchange and cooperative access among libraries at regional, national, and international levels.

10.6 Bibliographic Services

Bibliographic control has been greatly simplified with ICT. Specialized bibliographic software like **EndNote, RefWorks, Zotero, and Mendeley** helps researchers and academicians to:

- Compile, organize, and manage citations and references.
- Generate bibliographies automatically in multiple citation styles (APA, MLA, Chicago, etc.).
- Collaborate and share bibliographic databases with peers.

Libraries also provide online bibliographies, indexes, and citation databases to support research and academic writing.

10.7 Translation Services

ICT tools have made multilingual resources more accessible through machine translation. Tools such as **Google Translate, DeepL, and Microsoft Translator** help in:

- Translating documents from foreign languages into English or regional languages.
- Facilitating access to global literature for non-native speakers.
- Supporting cross-cultural research and academic collaboration.

Although machine translation may not be perfect, it provides a practical solution for basic comprehension and information access.

10.8 Database Search and Guidance

Databases form the backbone of modern research. Libraries use ICT to provide access to a wide range of online databases such as JSTOR, Scopus, Web of Science, PubMed, and subject-specific repositories.

To maximize benefits, libraries also:

- Offer **database search guides** and tutorials through library websites.
- Conduct training sessions and webinars for faculty and researchers.
- Provide personalized guidance for effective search strategies (Boolean operators, field searching, citation tracking).

This ensures that researchers can retrieve high-quality, relevant information for academic and professional work

XI. Conclusion

The effective application of Information and Communication Technology (ICT) in libraries significantly enhances user satisfaction by providing faster, more reliable, and user-friendly services. In the present digital era, libraries are no longer confined to physical spaces but are evolving into dynamic information hubs. The demand for updated technology is therefore inevitable to ensure timely access, seamless resource sharing, and improved service delivery.

With the continuous emergence of new technologies, it becomes essential for library professionals to upgrade their knowledge, skills, and technical competencies to remain relevant and effective. The quality of services rendered—rather than the mere size of the collection—defines the success and credibility of a library. ICT empowers libraries to expand their operations, ranging from automation of housekeeping functions to the creation of digital repositories, virtual reference services, and collaborative networks.

Hence, the integration of ICT is not just a supportive tool but a strategic necessity for modern libraries. By embracing technological innovations, libraries can maximize the utilization of resources, ensure equitable access to information, and maintain their pivotal role in education, research, and lifelong learning. For library professionals, staying updated with ICT is no longer optional; it is fundamental for sustaining professional growth and ensuring the library's continued relevance in the knowledge society

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