

Emerging Trends And Technologies in University Libraries : A Review of Literature

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Abstract

This article focuses on the latest developments in university library technology as well as those in the field of library and information science more generally. This paper's goal is to educate readers about new developments in the field of library and information science, such as digitalization, library automation, institutional repositories, RFID implementation, virtual/digital reference services, CAS/SDI services, web 2.0, 3.0, and 4.0 based services, social media, artificial intelligence, semantics, and smart librarianship through technology. Despite widespread belief to the contrary, library workers really have better job security and greater opportunities in the future if they can stay up with the latest developments.

Keywords: Library automation, Digitization, RFID, CAS/SDI, Artificial Intelligence.

1. Introduction

Access to information sources and services, as well as the encouragement of academic research, are two of the most important functions of a library of an academic institution. Since library services are foundational and impact the whole educational system, the success of each educational institution is dependent upon its library. Learning and instruction aren't the only things that academic libraries help with; they also aid with research, publishing, and the preservation of ideas and information. Academic libraries have seen tremendous transformations, with much of the credit going to advancements in information and communication technology (ICT). In information and communication technology, the two fields work hand in hand to facilitate the transfer of data. Any number of tools and resources used for communication may be grouped together as information and communication technology (ICT). For the purposes of creating, distributing, collecting, and managing data, they employ. It helps libraries continue to thrive and play an important part in the transition to knowledge-based society.

2. What is Emerging Technologies:

Technologies that are either in the process of development or are anticipated to be created in the near future are known as emerging technologies. Commonly, these technologies are defined by the far-reaching effects they may have on many different sectors of the economy and people's everyday lives. "Emerging technologies are inventions that have the potential to change the status quo," says businessdictionary.com. These innovative technologies are either already in the works or will be produced over the next five to ten years; they will greatly affect the social and economic landscape. When new technologies take off, they have the potential to create brand-new, high-tech goods or to enhance, integrate, and reorganise current ones. Many different areas are contributing to the rapid development of new technologies; they include

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AI, biotech, computers, genetics, IT, healthcare, nanotech, web tech, networking, telecommunications, and many more. Even while developing technologies hold great promise, there are a lot of technical unknowns and substantial financial risks associated with them. A few examples of new technology include 5G wireless networks, quantum computing, the Internet of Things (IoT), blockchain, virtual and augmented reality, and artificial intelligence. Many times, these technological advancements are still in their infancy. Although their widespread adoption is still pending, they have great potential to revolutionise several sectors and improve our standard of living.

3. Emerging Trends in Libraries

New developments in academic libraries include the ones listed below.

- **Library automation :** The intricate program/database of an integrated library system (ILS) or library management system (LMS) carries out a wide variety of library operations simultaneously. One example of a specialised function, sometimes referred to as a "module," is the Online Public Access Catalogue (OPAC), which helps library patrons locate the information they need. There are a plethora of information library system (ILS) options, both commercial and open source. Some examples are CodeAchi Library Management System, LIBERO LMS, LIBRARIAN, Access-It, and Soutron. Web-Scale Management Services and OCLC's WorldCat are two technologies that will facilitate international data sharing among libraries.

- **Library Digitalization :**

Digitising Library Collections Having the materials accessible digitally simplifies both information storage and retrieval. The libraries are able to save money and space as a result. Conversely, IR systems that provide support, such as E-prints and Dspace, may keep all of the archived content.

- **Institutional Repository :** in this age of rapidly evolving information technologies, must band together to expand the bounds of knowledge through the use of shared cataloguing and interlibrary loan services, as well as by putting an emphasis on resource sharing through consortia and group purchasing, which will help them manage budget cuts and other cost-cutting initiatives. All participating libraries will get an equal share of the materials purchased or subscribed to by the group of librarians. In terms of cooperative library resource sharing, Ohio LINK stands head and shoulders above the competition. The repository for an institution When resources are accessible digitally, storing and retrieving information becomes much easier. The libraries are able to save money and space as a result. Conversely, IR systems that provide support, such as E-prints and Dspace, may keep all of the archived content

- **Digital Library Service :** A Service for Digital Libraries Many readers have a strong affinity for the physical, printed artefact and are ambivalent or negative about the digital form of books, which is why most readers still prefer printed books over e-readers. One reason for this is because books are timeless and easy on the eyes. While older generations have always enjoyed reading physical books, today's youth are increasingly turning to electronic devices like the iPad, Sony Reader, Kindle, and Adobe Digital Edition.

- **Instant Messaging (IM):** Instant messaging (IM) allows for near-instantaneous textual communication between several users in a real-time setting. As an alternative to traditional in-person reference services, libraries are already using IM to provide "real-time reference" where users may have real-time conversations with librarians.

- **Real Simple Syndication (RSS) Feeds:** RSS is an abbreviation for Rich Site Summary. A website or e-publisher may use the technology to display the most recent modifications (such as journal tables of contents or new articles) using XML, and a web user can use it to keep track of updates on their preferred website or websites.

- **HTML Feeds:** These allow academics to share RSS search results and engage in peer-to-peer interaction; they are essentially RSS feeds transformed into HTML codes. After inserting the HTML codes into the websites, the resultant HTML feed may be tailored to match the page's aesthetic. Users may obtain information more quickly via HTML feeds.
- **Media Streaming:** Providers engage in media streaming when they sequentially transmit multimedia material via a computer network, with the end user seeing or hearing the content played back in real time. Video and audio streaming is a significant application that has been there since the dawn of the Internet and continues to find use on the World Wide Web. Online library training started to include increasingly interactive, media-rich elements when the technology to allow multimedia streaming became available. The traditional, text-based lessons are giving way to more dynamic, multimedia based ones.
- **Pod casting:** The term "pod casting" is a portmanteau of "podcasting" and "iPod," the origins of which are unclear. Casting audio digital media files for online distribution via RSS feeds for playback on desktops and portable media devices is called pod casting. Podcasts are a great tool for library orientation courses, and some libraries employ them. The library profession is making remarkable strides ahead by capitalising on podcasting and other consumer technologies to offer library content and services.
- **Vodcasting:** "VOD" for "video-on-demand" is the abbreviation for online video broadcasting. Podcasting is the same thing. Vodcasting is a method of distributing video information, as opposed to podcasting, which is a method of providing audio data. You may listen to vodcasts on your laptop or personal media assistant, much like podcasts.
- **The SMS Enquiry Service:** The SMS is a way for brief messages to be sent over mobile networks. Using a library's SMS inquiry services, users may send questions to the library via text message. The reference personnel assigned to handle these types of inquiries may provide instant responses or provide links to more detailed replies.
- **Blogs:** A blog is a website that is often run by a person. On a regular basis, the blog posts comments, events descriptions, and sometimes even media like images or videos. Typically seen as simple publishing tools, entries are typically shown in reverse chronological order. A person or group of people may post information or give opinion on it via a blog. By today's standards, blogs are more user-friendly, cross-platform, and easily available online.
- **Wikis:** These online reference books allow anybody with internet access to add to or change the articles' content using a standardised markup language. According to Wikipedia (2008), wikis are often used to build community websites and collaborative websites. Wikipedia, a popular collaborative encyclopaedia, has disregarded one of the cornerstones of librarianship—the need to verify the accuracy and reliability of the material presented—in its articles. Theft detection systems and library circulation operations may both benefit from RFID technology. Beyond its initial use as a security measure, RFID-based systems have the potential to greatly improve the library's material tracking, inventorying, and charge and discharge processes, as well as the overall efficiency of the system (Boss 2004). Using this technology, librarians may save time that would otherwise be spent scanning barcodes while books are being checked out or returned.
- **RFID:** combines microchip technology with radio-frequency-based technologies. Unlike conventional theft detection systems, which need either line-of-sight or a fixed plane to read tags, the radio frequency technology used to read the information on library goods' microchips works independent of the item's orientation or alignment. The RFID gates at the library's exits may be four feet wide since the tags can be read from up to two feet away by each of the two sensors that run parallel to the gates.

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• **Quick Response (QR):** codes are yet another wonderful invention of information and communication technology. You may use your phone's camera to scan the QR code that any library displays. Use a QR code scanning software like BeeTagg or RedLaser to find out when the library is open and what resources are accessible to you.

• **Services for Virtual and Digital References :** A digital reference service is one that offers library users and librarians the chance to work together via a computer-based medium to access reference materials. Email, online forms, chat, video, web customer contact centre software, VoIP, and other media may be used by these services.

• **Content management system (CMS):** Managing information One way to keep track of all the material that goes on a website is via a CMS, or content management system. The content delivery application (CDA) and the content management application (CMA) are the two main components of a content management system (CMS).

The CMA element eliminates the requirement for a Webmaster's knowledge of Hypertext Markup Language (HTML) by empowering content managers and authors who may not be familiar with the language to handle content creation, alteration, and removal on their own. For the purpose of updating the website, the CDA element takes the data and compiles it. Publishing to the web, managing formats, revision control, indexing, searching, and retrieval are some of the most common aspects of content management systems (CMS).

• **Services for CAS and SDI :** SDI is a CAS variant. Their shared goal is to ensure that subscribers are always aware of what's new and important in their respective fields of study. One such service is CAS, or awareness. As a result, the user is kept abreast of all the latest happenings in his chosen field. On the other hand, SDI is concerned with delivering particular or targeted data. When dealing with CAS, it is not feasible to provide the precise information that the user requires, but when dealing with SDI, this is very essential. Individuals may benefit from SDI, an improved kind of current awareness service. Both offerings rely on up-to-date material that is readily available. Contrasted with CAS, which aims to raise awareness among all users, SDI caters to specific people or groups. SDI relies on matching the user's profile with the document profile, CAS is based on circulating the current list of periodicals among all users. In CAS, all the information is disseminated to the user on the specified subject, whereas SDI is selective depending on the particular information the user needs. Although SDI requires a computer, CAS does not need one. While CAS does not need feedback, it is an integral part of giving SDI service.

• **Web 2.0, 3.0, and 4.0 services:** Reading and retrieving data was the main focus of Web 1.0. The core principles of Web 2.0 are user-centered design, content creation, and interaction. The participatory social web was the well-known name for it. Web 3.0 is an ongoing effort to realise a decentralised web, the objective of which is the third generation of the World Wide Web. Reading, writing, and ownership are the three main points. Things like analytics, cloud computing, machine learning, artificial intelligence, and the Internet of Things (IOT) are all part of Web 4.0 technology.

• **Social Media Utilisation:** Social media is a potent tool that academic libraries may utilise to attract more users, spread the word about their resources and services, and improve the user experience overall. Online platforms Many academic libraries may market their resources and services, such as new purchases, research guides, and workshops, on social media sites like Twitter, Facebook, LinkedIn, and Instagram. This will increase the library's visibility and the number of people using its services. Also, by interacting with library patrons on social media, staff can better serve their needs and address their questions. Academic libraries may promote their services and resources and disseminate daily news and event announcements using these media. Academic libraries may reach a wider audience, educate people about their resources, and form partnerships with other institutions all via social media and search, one technique is to "tag" content (such as a photo, a map, a blog post, a video clip, etc.) with relevant terms or topic headings. In most cases, tags are casually and subjectively selected by the author, creator, audience, or community. Common types of resources that make

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use of tags include digital photos, web pages, files, and bookmarks on the Internet. As a service, social bookmarking allows users to save, sort, search, and manage their favourite websites' bookmarks with the use of descriptive metadata. People may share and/or store links to websites they find interesting in a social bookmarking system. You may choose to make these bookmarks public, private, or share them with just certain individuals or organisations.

•**Semantic Web:** The capacity to share and reuse data across many systems, applications, and platforms is a hallmark of the World Wide Web and is referred to as the Semantic Web. Data may be described and represented in a machine-readable manner using a set of standards and technologies that make it possible for computers to comprehend and analyse the data. By facilitating cooperation and interoperability and improving the user experience for researchers, students, and teachers, the semantic web may revolutionise academic libraries' data management and sharing practices. Academic libraries will find it much simpler to manage and distribute information across various systems and platforms with the help of this defined method of defining and organising metadata. Academic library catalogues will be able to search more effectively thanks to this improvement in search results that are based on the context and meaning of user queries. By connecting to one another and other systems via the semantic web, academic libraries may work together more effectively and share more information.

•**Content Management System (CMS) :**Website material may be organised and updated with the help of a material Management System (CMS). There are usually two parts to a content management system: software programme, as well as the content delivery application. By utilising the CMA element, content managers and authors can handle content creation, modification, and removal without requiring the knowledge of a webmaster. The CDA element then uses and compiles this information to update the website. Although content management system (CMS) functionality might differ, the majority of systems allow for online publication, format management, revision control, and search, retrieval, and indexing.

• **CAS/SDI services:** SDI is a CAS variant. Their shared goal is to ensure that subscribers are always aware of what's new and important in their respective fields of study. One such service is CAS, or current awareness service. As a result, the user is kept abreast of all the latest happenings in his chosen field. On the other hand, SDI is concerned with delivering particular or targeted data. When dealing with CAS, it is not feasible to provide the precise information that the user requires, but when dealing with SDI, this is very essential. Individuals may benefit from SDI, an improved kind of current awareness service. Both offerings rely on up-to-date material that is readily available. Contrasted with CAS, which aims to raise awareness among all users, SDI caters to specific people or groups. SDI relies on matching the user's profile with the document profile, CAS is based on circulating the current list of periodicals among all users. In CAS, all the information is disseminated to the user on the specified subject, whereas SDI is selective depending on the particular information the user needs. Although SDI requires a computer, CAS does not need one. While CAS does not need feedback, it is an integral part of giving SDI service. Libraries rely on machine learning for a variety of services, including reference services, cataloguing and categorization, information retrieval, indexing and abstracting, and collection management. Clustering, classification methods, support vector machines, fuzzy logic, K-nearest neighbour, and Bayesian networks were among the machine learning techniques used.

• **Cloud computing:** It refers to a method of storing and retrieving data over the Internet via a network of distant computers. preserve information, programmes, and applications. Thanks to its usefulness in managing various information and communication technology services with little effort, cloud computing has recently become a buzzword in the library profession. server maintenance, updates, and data backups are handled by third-party services in the event of an issue. The use of AI These days, computers have it far easier than humans when it comes to learning, speech, pattern recognition, and decision-making. Consequently, getting one's questions answered by a computer is rapidly becoming the norm.

•**Artificial intelligence (AI):** It is constantly improving in understanding our information demands and providing appropriate

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replies. That we will probably start to depend on it more heavily is a given. This means that going forward, the exchanges will not be as groundbreaking but will be more crucial.

• **Big Data analytics:** By analysing user behaviour and preferences, academic libraries can improve their services and resources. Big data is the phrase used to describe the massive volumes of data, both organised and unstructured, that are created in many different fields. Academic libraries may now employ big data analytics to monitor how often and on what devices users visit their databases, e-books, and journals. This will help them determine which resources are most popular, when users access them most often, and what devices they use the most. In order to find gaps in the collection and to guide choices about collection development, it is helpful to analyse user behaviour, such as search queries, browsing habits, and resource consumption. Personalised recommendation systems that propose suitable articles and books to users based on their interests and use habits may also be developed using big data analytics. As a whole, academic libraries can better serve their patrons' requirements with the use of big data analytics.

• **IoT or the Internet of Things:** Right now, IoT is the technology that has the greatest impact on library services. It will be sensed and sent by smaller computer devices, radio devices, the cloud, user interfaces, gateways, analytics, and artificial intelligence (ALA, Internet of Things, 2018). Connecting commonplace things and allowing them to exchange data is what the Internet of Things (IoT) is all about. Possibilities for library applications abound, including keeping tabs on programme attendance and room use as well as specific collection humidity levels. As a result, by expanding its services and collection, the library can provide patrons with an improved service. According to Garland (2018) Smartphones and tablets, for example, have become more commonplace in recent years, and this has had a profound effect on people's ability to access and interact with data. Therefore, academic libraries have noticed that mobile technology may improve their services and open up new ways for users to participate. When it comes to mobile technology, one major perk is their ability to academic libraries provide its patrons the convenience of accessing materials and services even while they are on the go. Many university libraries have responded to this need by creating apps for smart phones and tablets that facilitate research using library catalogues, book reservations, and digital resources. For those who don't have the means or time to go to a physical library, this has greatly improved the accessibility and convenience of library services.

• **Blockchain Technology:** Academic libraries may take use of blockchain technology, a distributed ledger system that enables trustworthy and transparent transactions decentralised from a single point of control. The management of digital rights and permissions for library materials, including electronic books and papers, is one potential use case for blockchain technology in academic libraries. Digital content may be preserved and made accessible for the long term with the help of block chain technology, which creates immutable records of ownership, licencing, and use rights.

• **Augmented Reality (AR):** AR is a creative technology that enhances the user experience and offers new ways to interact with academic library resources by superimposing digital material, such movies or photographs, onto the real environment. For example, users may create virtual tours or interactive maps to explore the library area using augmented reality, which provides immersive and engaging experiences. One example of biometric technology is facial recognition, which digitally determines an individual's identification by statistical measures of their face traits. The library can employ face recognition technology to identify patrons as they enter the building; this technology might eventually eliminate the need for conventional library cards, which include information such as a patron's name, address, the books they have checked out, and if any of their books are overdue.

• **Drones:** Drones are used in many different fields, including research, transportation, art, entertainment, journalism, surveillance, and law enforcement. It will open up new possibilities for study and content development. Library patrons could reasonably anticipate that drones would be offered as technological resources. Libraries can also end up collecting and managing drone-produced video or survey information. For library patrons who are unable to physically visit the

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building (due to illness, injury, or sheer distance), drones may be used for a variety of purposes, including data collection, content creation, and delivery services.

•**Virtual reality (VR) technology** : It allows users to don a headgear and be whisked away to otherworldly locations via computer-generated simulations. Libraries nowadays may take use of a new opportunity by providing virtual reality services to its patrons. virtual reality (ALA, 2018) states that many innovators in the field of education are concentrating on the two primary functions of libraries, namely, their collections and their places. It's important to make robotics accessible to people so they can learn about it. From an economic development perspective and job- and career-development perspective, it's so important (ALA, Robots, 2018)." Libraries and other educational institutions could play a role in helping displaced workers develop new skills and improving the skills of workers so they can adapt to workplaces where robots take over a lot of the work.

4. Literature Review:

Here is a literature study of new technology and trends in university libraries:

Pandiyan, M. and Kulkarni, A.M. & Patankar, G.P. (2023) emphasise the significance of the SMART use of Koha ILS (Integrated Library System) in assisting libraries with resource management and improving patron services. The library's books, journals, and other materials may be easily managed using Koha, a centralised database. Proper cataloguing, classification, and shelving of materials aids the library in keeping track of its collections. Library users will appreciate the intuitive design that streamlines the process of finding and using library materials. For an even more streamlined experience, the system can connect to other systems like digital collections and online catalogues. Koha streamlines a lot of the mundane processes involved in managing a library, including circulation, checkout, and fines. Both efficiency and the number of mistakes made by hand are improved by this. Decisions and the efficacy of library programmes and services may be better informed by the data provided by Koha. Library programmes may be evaluated, consumption patterns monitored, and trends identified with the help of the system's reports and data analytics. Libraries may save money on licencing costs using Koha since it is an open-source option, unlike proprietary systems. Additional cost savings may be achieved by tailoring the system to each library's unique requirements. Improving resource management, user experience, efficiency, data analytics, and cost savings are just a few of the many advantages that libraries can reap from SMART adoption of Koha ILS.

S. K. Shashidhara, L. (2023) Internet of Things (IoT) uses in libraries to showcase the possibilities of IoT uses in library operations, especially in academic settings. Readers are warned about potential ramifications as the article delves into various aspects of Internet of Things applications in libraries. The research is exploratory in character, and it draws from a wide range of sources to compile its national and worldwide publications. The research includes articles that promote or advise libraries to use IoT technology. Included in the study's five parts are an introduction, a definition of the Internet of Things (IoT), examples of IoT in libraries, and a discussion of the benefits and drawbacks of using IoT. Based on our research, we know that there are a number of Internet of Things (IoT) apps that libraries may use, but so far, only a small number of libraries in Western countries have adopted these apps, and the technology is still not widely used, especially in libraries in India. In conclusion, the incorporation of IoT technology into libraries is essential for offering both current and conventional services to a large number of technically adept users wherever they may be, notwithstanding the cyber security concerns and obstacles.

By Singh, B.P. and Madhusudhan, M. (2023) does a systematic review of library apps that use mobile technology to provide a thorough study and examination of the relevant literature. This study primarily aims to review the various theoretical and

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practical aspects of mobile technologies, QR codes, best practices, standards, and implementations in libraries, including mobile apps, websites, databases, SMS-based services, and mobile technologies. Professionals in the field of library and information science are leading the way in incorporating mobile and QR code technology into their libraries in order to meet the demands of library customers for immediate access to information via their mobile devices.

Nepali, Somand Tamang, Rajesh. A relatively new development in library service is the use of mobile technology (2022).

Both the academic community and the student body are very enthusiastic about the future of mobile technology. For libraries to provide these kinds of services, they need this kind of infrastructure. Knowledge of technologies such as IoT applications, gamification, mobile-based services, and augmented reality. The research employed a descriptive methodology and an online survey to gather data. Literature about new library trends was gathered from relevant online papers and comparable efforts. To kick out the project, we looked at current trends, types, and technical advancements in different sorts of libraries. Important information about the To further examine the relevance, use, and significance of new technological developments in libraries, we additionally scour academic journals and internet databases for relevant topics. The current state of the art in library science is the subject of this discussion. This study names a few of the latest fads. Only a small subset of available technologies were considered for inclusion in the research, which is a constraint given the rapid pace of technological advancement.

Saibakumo, 2021. Expanding and improving information services is crucial to the long-term viability and support of academic libraries in today's technology world (Saibakumo, 2021). Recent technical advances have compelled libraries to adopt all-embracing, user-friendly, and technology-driven approaches to service delivery, making the incorporation of IoT technology into libraries an absolute need in academic libraries. It would seem that modern technology has filled this apparent gap. The research shows how well academic libraries in Nigeria comprehend, use, and are prepared to incorporate new technology into their daily operations.

According to Chingath (2020). one of the primary goals of his research was to show how libraries use technology effectively and efficiently. However, the author also discussed how libraries are using and benefiting from important technological breakthroughs including mobile apps, blockchain, robotics, drones, and big data. Although the author conducted further research and reviewed the existing literature, they also chose and described the library services and sectors that may benefit from the technology.

According To Moruf And Dangani (2020), Librarians and other information technology professionalsshould become experts in technology that academic institutions can use. This is because digital competence development is a cornerstone of all academic curricula. Academic libraries are at the forefront of this technological shift, and their research delves into why these institutions need to reevaluate and refocus their offerings in light of this new reality.

Acharya, Hiremath and Lalasangi (2019). The proportion of advancement in the cutting-edge library is highlighted by In order to accommodate customers' data requests at this time, the library and data benefits, as well as the responsibilities and goals of library professionals, undergo several changes in response to the present state of affairs. The influence of ICT has led to digitalization in the realm of library and information science, a new perspective has arisen. Computerised innovation has made a home for itself in every industry and walk of life.

Shashikumara and others(2019). In an attempt to better serve libraries and library workers try to keep up with the latest technological advancements. Alterations to library technology in the future will have far-reaching effects on the country's population, economy, society, ecology, and politics. In their research, they looked into the key technical advances brought forth by ALA. Libraries and librarians are able to provide better services and goods thanks to modern technology. If they

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want to implement and embrace the latest trends in libraries, library professionals need to be knowledgeable of these strategies. Recent technological advancements have offered a plethora of library options, especially with the introduction of cutting-edge technology into library systems. With the release of Library1.0, Library2.0, and Library 3.0, libraries have undergone a radical transformation, offering new services in addition to the old ones. Library 4.0 lays the groundwork for how libraries and their services will evolve in the future thanks to its technological advancements.

In their 2017 article, Barathi, Loganathan, and Rajan detailed how libraries and information management have benefited from technological developments. Filling a need in the literature on digital library project management, this study provides an overview of the challenges associated with integrating and employing new practices and developing technology within libraries. New and emerging technologies aid in the discovery, assessment, and use of both established and emerging technologies to library administration and service provision. In order to stay up with the fast-paced world, it is necessary to regularly update library management and services in response to challenges posed by technology developments.

Three public and two private university libraries participated in this study, according to Makori and Mauti (2016), which was conducted at five different educational and learning institutions. The Commission for University Education is attempting to combine the two sectors of Kenyan higher education, despite the fact that public institutions get substantial funding and support. A recent online rating of higher education institutions rated Kenyan public universities among the finest in the world (Webometrics rating, 2015). The digital repositories established by university libraries have also been rather effective in raising the profile of scholarly works published all over the globe. Academic institutions rely on libraries for a wealth of information and professional knowledge that helps them accomplish their goals.

According to Sinha and Chanda (2014), RFID technology must be used immediately in North East Indian libraries and information centres. The administration of various university and institutional library operations may benefit from RFID technology. The research delves deeper into the topic of RFID technology implementation in North East Indian universities and institutional libraries.

investigated by Sinha (2013) Several potential issues and roadblocks have been identified and within the framework of the North-Eastern India Library Network. To help this effort succeed, several suggestions and ideas have also been put up.

Researchers Turner, Welch, and Reynolds (2013) looked at how academic librarians spoke about research areas and information in the early 2000s. Using terms originating from the concept of information communities, it delves into the evolution of academic libraries and the establishment of learning spaces. Before the advent of "maker spaces," the literature evaluation for their study was heavily influenced by ideas about potential new ways that university libraries may utilise their physical locations to house research, education, and creativity. Historical shifts, goals, educational impacts, and traits that contribute to a deeper comprehension of shifts and trends are all considered, as is the language of each model.

5. FINDINGS OF THE REVIEW OF LITERATURE:

The following articles discussed the current state of new technology in university libraries throughout the world.

In 2023, Kulkarni, A.M., Pandiyan, and Patankar published a paper. Libraries may better manage their resources and serve their clients with the aid of the SMART use of Koha ILS (Integrated Library System). **L, Shashidhara K. (2023)** Internet of Things (IoT) integration into library operations to showcase the possibilities of IoT integration into library operations, especially in academic settings. In their systematic review of library apps, **Singh, B.P., and Madhusudhan, M. (2023)** go deeply into the topic and investigate the relevance of the existing research. **Somand Tamang, Rajesh, Nepali (2022)** A relatively new development in library service is the use of mobile technologies. Both the academic community and the

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student body are very enthusiastic about the future of mobile technology. The year 2021 was mentioned by **Saibakumo**. However, not many people are prepared for or knowledgeable about using the cybrary, library website, WebOPAC, institutional repository, or social media, and adoption is stalling out among 18 new technologies. Technologies such as RFID, the internet of things, the Library Guide app, and the Integrated Library Management System have all made extensive use of the usefulness and nature of learning settings. The creation of an encrypted database, talking robots, flying books, etc. are all feasible library technology, according to **Chingath (2020)**. A more comprehensive enhancement of library services will result from the incorporation of these technologies. According to **Moruf and Dangani (2020)**, new library technologies like software for instructional system design, electronic resource management, library automation, integrated search, electronic copyright management, bibliographic citation, and classroom management will play a significant role in the evolution of digital content in academic libraries. The groundbreaking innovations discussed in the article by **Acharya, Hiremath, and Lalasangi (2019)** include: With the evolution of media labs and maker spaces, facial recognition is entering its prime. The library's robotics programme, VR programmes, 3D printers, kinetic bikes, and other technological resources Digital narrating, Book conveyance rambling, Digital interface for printed books, E reader apps, Cloud printing, reproducing and checking. Connected toys, data everywhere, drones, blockchain, haptic technology, face recognition, VR, voice control, robotics, and plugged-in are some of the modes of technological progress chosen by **Shashikumara and colleagues (2019)**. And how new technology might emerge periodically, and how technology may change libraries forever. Technical advancements need constant updating to keep up with the ever-changing environment (**Barathi, Loganathan and Rajan, 2017**). Through the fast proliferation and use of contemporary technology, a traditional library has evolved into an automated, electronic, virtual, and digital library. The academic library environment has been a game-changer in this transition (**Jan and Sheikh, 2011**). Academic institutions in the modern era must possess sufficient information infrastructure to enable students and faculty to access a wealth of educational, informational, and knowledge-building resources through digital technologies, digital warehouses, the Internet of things, mobile computer systems, and social media platforms such as YouTube, Twitter, and Facebook. The internet and social cloud computing are examples of modern technological resources and facilities that should be used to extend digital environments that include e-learning, e-resources, e-information, and electronic archives (**Makori and Mauti, 2016**). However, **Sinha (2013)** highlighted a number of open-source programmes that may be used to build library networks. Facebook, wikis, blogs, RSS Feeds, LinkedIn, stream media, etc. are just a few of the many social media platforms that might bring together LIS professionals and disseminate information to member libraries. Lastly, in regards to national and international scenarios, **Sinha and Chanda (2014)** outlined the use of RFID technology, which has grown significant in libraries and other commercial organisations. There is an immediate need for further study into the possibilities of deploying RFID technology in Northeast Indian libraries and information centres. Libraries in the present day are, unsurprisingly, working hard to prove their value and satisfy their patrons.

6. Conclusion

There are a lot of new ways that services may be delivered utilising evolving web technologies due to the ever-changing information paradigm, and librarians will need to acquire new skills to keep up. Everyone from library and information science workers to users, patrons, academics, and publishers faces new problems brought forth by current events and new technology. Certainly, the new environment presents a myriad of novel characteristics and pathways; furthermore, intriguingly, there is an abundance of opportunities—many of which are even free—if we are able to effectively use them. Librarians in the modern digital age have a once-in-a-lifetime chance to improve user-centered services and foster cooperation with patrons via the use of emerging technology. The community's opinion of libraries is likely to improve if they adopt some of these trends and use some of the new online technologies. Many of these initiatives have the potential to increase the library's membership, draw in new users, or solidify the library's position as an integral part of the community's and school's history and culture. Libraries are expected to undergo continuous improvement via the

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introduction of new services, which will enhance their appeal, relevance, and overall acceptability. Still, libraries are places where ideas, methods, and applications will evolve over time.

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