

Emerging Trends in Library and Information Science Research

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Abstract: This article examines the ongoing Library and Information Science (LIS) research, whose dramatic transformations it notes as a function largely of technological advancement, ongoing evolution in user expectation, and an emphasis on equitable information access. Innovative technologies such as artificial intelligence (AI), big data analytics, and block chain are modernizing information management and library services as key areas of investigation. It also mentioned that there are user centered approaches to promote inclusivity and community engagement as well as ethical problems, including data privacy, algorithmic bias. The research also shows how libraries are vital to academic and professional research work, and how they must also disentangle themselves from social and ethical problems in the digital space. It also urges for a multidisciplinary perspective in LIS research, that is, to conduct collaboration with other fields for addressing the requirements of many different user communities. The ultimate goal is to foster future library practices that take advantage of the new opportunities presented, and professional landscape of LIS that ensures libraries are relevant and responsive to new societal needs.

Keywords: Emerging Trends, Library and Information Science Research, Artificial Intelligence

Introduction

The LIS profession has undergone spectacular changes in the last two decades primarily due to technological advancements, evolving customer needs and demands, and the globalization of the concept of informational equity. That sort of trend is changing the very nature of LIS research, including areas like technology developments, focus on users, ethics, and interdisciplinary. It introduces briefly those trends and provides their outcome for libraries, information professionals, and society at the at large scale's rapid technological changes, changing user expectations, and international focus on information access and fairness. Such trends are transforming the very landscape of Library and Information Science (LIS) research itself, including such areas as emerging technologies, user centricity, ethical considerations, and multidisciplinary collaboration. This article gives an overview of those trends and introduces their result for libraries, information professionals, and society at large scale.

Research on LIS Practice and Research Demonstration

Technological advancement is the moving image that reforms the Library and Information Science (LIS).The roles of such innovative technologies as artificial intelligence, big data, block chain and machine learning transforms the ways of handling, sharing and archiving information in libraries.AI is becoming a new trend for

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libraries in managing their libraries and delivering services to patrons (Chen et al., [2018](#)); and has been used in several tasks such as automated indexing, information recommendation, predictive analysis to enhance library service (Huang & Liao, [2020](#)) Likewise, big data analytics assist libraries in analyzing patron use. Hence, the emergence of digital libraries, coupled with the conversion of paper based collections into digital formats, more attention has been paid to further research on lifespan issues of digital materials and methods of dealing with digital obsolescence challenges. For example, block chain technology is studied as a possibility to improve the openness and protection for the stored digital assets (Zhang et al., [2021](#)). Nevertheless, this trend reflects the growing dependence on more high-tech solutions, in response to the demands of the information age. Recent yet innovative technologies ranging from artificial intelligence (AI), big data analytics, block chain, to machine learning transform the way library information is caught, delivered, and maintained. Artificial intelligence is being emerged as a recent trend in library management and services, (Chen et al., [2018](#)) and has been implemented for various applications in such as automated indexing, personalized resource recommendation and predictive analysis to improve library service (Huang & Liao, [2020](#)) By the same token, big data analytics is indeed assists libraries in the analysis of user behavior.

As a result, the increasing number of digital libraries, and the digitalization of paper collections, has motivated additional research into long term preservation of digital content, and ways of dealing with the long term digital obsolescence problems. For example, block chain technology as a means to improve the transparency and security of digital repositories is explored (Zhang et al., [2021](#)). It corresponds to the increased dependence on more of the hi tech solutions required for the contemporary information landscape.

User-Centered Approaches and Inclusivity

However, use of user centered techniques is one of recent advances in research made in Library and information sciences (LIS). No longer are libraries just information repositories, but rather dynamic hubs within their communities that meet the intense needs of their users. This research takes two steps to analyze user education: focusing on understanding the behaviors of the different demographic groups information sought—less well represented and privileged to underrepresented and underrepresented—in information seek. This is part of the wider push to broaden the range of services and representation rendered by those services. As libraries move towards more participatory models, libraries become systems that the user directly influences library policy and programming. One the hand, libraries are demonstrating that maker spaces and digital literacy programs encourage user creativity, innovation and skill development (Birdie et al., [2018](#)). Those programs focused on how libraries are key to creating the lifelong learning and social solidarity.

Social and Ethical Aspects

The new digital age has been pushing libraries and information systems in nontraditional directions along with some really difficult ethical dilemmas. In library and information science (LIS) research the issues include algorithmic prejudice, digital divide, data privacy and intellectual property rights. It researchers these frameworks between the need to protect user privacy and data privacy (Smith & Anderson, [2020](#)) and the need for free access to data. Studies in the function of libraries as a field of study resulted from questions of fairness and social justice. Libraries are increasingly being seen as change agents influencing closing the digital divide and ensuring that everyone in communities has equitable access to information resources (Jaeger et al., [2015](#)). That means smashing through systemic obstacles that hit the underprivileged so hard: poor technology infrastructure and information illiteracy.

Multidisciplinary and Worldwide VIEWS

LIS is becoming a more and more multidisciplinary field, and we are thinking in fields like public policy, education, and sociology, and computer science. What makes this cross disciplinary approach particularly useful for dealing with the complicated problems entailed in that have a potential for cognition and imaginative solutions to meet patrons' various demands (Lankes, 2016). The Research in Library and Information Science (LIS) have been also put into cross cultural studies and multinational cooperation as a result of globalization. Multilingual information retrieval systems and metadata, the process of transferring information across borders, researchers explore standardization in order to perform the process of transferring information across borders (Ibekwe-SanJuan & Dousa, [2014](#)). The initiatives suggest how engaging in the international dimension to LIS problems and opportunities is crucial.

The study of the new trends in Library and Information Science (LIS) research demonstrates the continuous interaction of societal demands, technical progress, and search for knowledge. LIS academics in the contemporary world reformulate the powers of libraries and information systems with innovation, inclusion and cross discipline collaboration.

Literature Review

Digital technologies have hybridized with each other and information literacy's focus on constant learning and flexibility of the user has emerged as a result. According to Smith, (2021), digital literacy can only be realized by library science professionals with the purpose of serving their diverse user groups. This commitment to the value of libraries in closing the digital divide and ensuring equitable access to resources is one that is celebrated as highlighted in this study.

Gaining popularity in libraries, artificial intelligence (AI) applications like automated cataloging and user behavior analysis are becoming popular. Johnson & Lee, (2020) describe AI as an enabler that allows libraries to use resources and improve the user experience. But the authors note that ethics considerations and transparent AI systems are necessary, otherwise, we won't be able to understand, or receive permission, when a machine makes mistakes.

Open publishing (OA) has transformed how libraries manage scholarly communication. In Miller, (2019), challenging for libraries is the management of OA content and copyright compliance. This paper discusses the adoption of sustainable OA models and their implications on a library budget policy.

How libraries are processing big data from big data analytics is changing, allowing libraries to make better decisions and allocate resources. According to Kumar et al., (2020), libraries are increasingly using big data to understand user behavior, refine services, and increase operational efficiency. However, the study has highlighted challenges such as data privacy concerns and lack of technological literacy among employees.

Libraries call for urgent digital preservation today, given the fast-growing volume of digital contents. According to Yoon & Park, (2021), the libraries' adoption of sustainable digital preservation strategies must be done by cloud storage and block chain technology to ensure long-term accessibility of information.

The user-centered design principle is increasingly becoming a part of modern library services to meet user expectations. As Patel & Thomas, (2019) note, libraries are applying the design thinking method to design spaces and services in response to varied user needs, which increases engagement and keeps the libraries relevant in the digital era.

Hybrid learning environments are becoming the new library spaces because of the COVID-19 pandemic. Walker, (2021) delves into the ways through which libraries are redefining their physical and virtual spaces for the safety and access of users. Technology has been underlined in this study to be one of the gap fillers in the course of remote learning.

Libraries are using gamification to make instruction more engaging and effective. According to Davis & Chen, (2020), the inclusion of game-based learning tools increases participation and retention of information literacy concept the study demonstrates examples of how libraries are applying escape rooms and digital badges in instruction.

Libraries are increasingly addressing diversity and inclusion in their programs and services. Johnson & Perez (2021) argue that libraries should focus on culturally sensitive practices to better serve marginalized communities. Their research highlights policies aimed at improving access to quality library resources.

Cloud computing has become an essential tool for modern libraries, enabling scalable and cost-effective services. In this article, Chen and Lee (2019) propose the use of cloud storage for documenting, information storage, and collaborating in libraries. Besides, they also have challenges such as data security and vendor dependency.

Library engagement and engagement have become largely social media platforms. Based on Ahmed & Patel, (2020), libraries use Face book, Twitter, and Instagram to reach out to patrons, advertise events, and circulate resources. Understanding this helps make it apparent why dynamic content is important to keep users happy.

Open Science Initiatives seek to open up, and make, scientific research more accessible and transparent

Taylor, (2019) describes how libraries help in these efforts by establishing open data repositories, promoting open publishing and educating researchers about the open science principles.

Virtual reality (VR) technology is being leveraged by libraries to build virtual immersive learning experiences. Gomez & Harris, (2021) point to the application of VR for, for example, providing virtual tours, simulations for learning, and use of VR for telling stories, to make young audiences get engaged and enhance their learning experience.

Librarianship has immensely been affected by the changes in scholarly communication in the digital era. Wilson, (2020) analyzes the struggle that libraries are undergoing to provide and manage these digital collections, combat misinformation, and ensure sustainable access to scholarly services

Maker spaces in libraries are becoming more widespread as a way of fostering creativity and innovation. Jones & White, (2019) discuss how these spaces provide access to equipment such as 3D printers, robotics kits, and design software, with visitors learning new skills and working collaboratively.

Statement Of Problem

The development of new technologies and the ongoing transition towards a more humane society have continuously placed LIS under the question to evolve. However, people in these mentioned fields have little or no literature on how the current trends are influencing the new forms of practices of those libraries, research supporting role, social and ethical issues raised by the use of new technologies.

1. Emerging technologies which are shaping the dynamics of the library and information sector need to be researched upon and understood.
2. There is lack of extensive research regarding how much retention is there within the libraries in order to promote researchers within the shift to a digital and data rich world.
3. Library practices should take into consideration many social and ethical issues, such as privacy and digital equity, as well as the ethical use of AI, in order to adhere to the fundamental social and professional values.

In the future, it would proved beneficial in shaping the future development of libraries as well as the LIS professionals by tackling these gaps as it would increase the innovativeness as well as sustainability.

Research Objectives

- To identify and analyze emerging technology in LIS Research
- To examine the role of libraries in supporting Research
- To identify social and ethical challenges in LIS Research

Emerging Technologies

This objective specializes in exploring the mixing of progressive technologies like artificial intelligence (AI), large facts analytics, block chain, and system studying into Library and Information Science (LIS). These Technologies are changing the way libraries generate, share and manage statistics. In any case, the possibility of computerized indexing, customized guidelines, and predictive analytics to improve library offerings (through the utilization of AI) in the meantime as block chain likewise chips away at advancing the transparency and protection of virtual repositories. Based on these technologies, the study attempts to provide an understanding of their current day packages, benefits, and potential future developments in LIS."

Role of Libraries in Supporting Research

This same goal highlights how crucial libraries are in supporting academic and professional research. While modern libraries have grown beyond information repositories to include the tools, data storage, and analytics that enable researchers. These cover access to exclusive dip-nires, provision of research recommendations, and integration of resources such as citation managers and plagiarism checkers In addition; libraries enable interdisciplinary research by presenting staff resources for transactions types of this solution. The study aims to examine how libraries adapt to the evolving needs of researchers and contribute to the production and dissemination of knowledge.

Social and Ethical Challenges

As a result of acceleration of the digital transformation process in LIS, new social and ethical challenges emerge.

This goal is concerned with issues intellectual like property the rights, digital for divide, instance; data libraries privacy, have algorithmic a bias, hard and time extending digital and resources protecting to user underserved data communities, in today's interconnected world. Areas of ethical challenge include making priorities and of transparency. artificial By intelligence identifying these challenges, the study seeks to recommend policies and strategies that will help libraries to remain equitable and inclusive institutions in the digital environment.

Research Methodolgy

Quantitative approach is employed in the study to explore the adoption of new technologies in research, library the science functions of libraries in research, and the social and ethical issues of these technologies in a systematic approach.

Data collect method

Primary data were collected through a structured Questionnaire that was distributed to participants both online and offline. The questionnaire was divided into four sections:

Demographics: Considers the roles, experiences and associations of the participants.

Emerging Technologies in Library and Information Science: Identifies emerging technologies identified and barriers to adoption.

Research Supporting Libraries: Examines the role of libraries in supporting research.

Social and Moral Challenges: Examines challenges faced and preparation in dealing with them.

Sampling population

The respondents were comprised of researchers, librarians, educators, and students that were linked with any type of institution including but not limited to academic, public, special, or corporate libraries. Both novice and veteran professionals that were in the field for over 10 years were included in the study to incorporate diversity in responses.

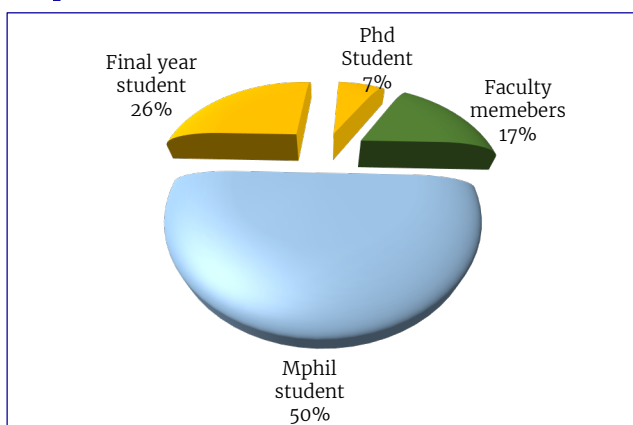
Results and Data Analysis

Responded Wise Distribution

Figure no 1 Show responded wise distribution based on their role in the library information science field. This chart shows that Mphil student constitutes the majority, representing 50% of the respondents. Final year student follow with 26% involvement in this field. 17% faculty members are reflecting their active engagement. Phd Students make up smallest portion at 7% indicating limited representation among this group.

Percentage

Graph 1



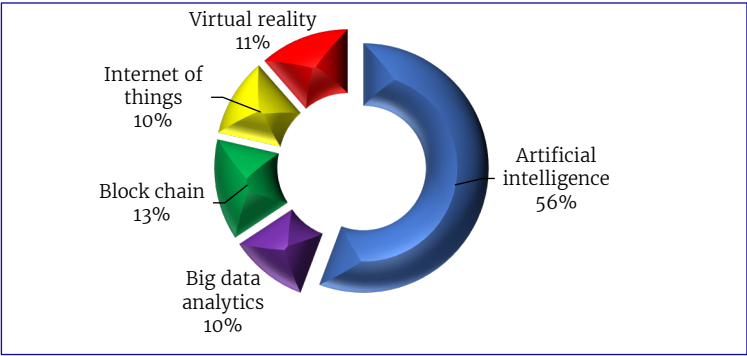
Technology Observed Wise

Figure No 2 The chart is a pie chart showing the percentage of emerging technologies adopted in the library and information science research. Artificial Intelligence (AI): Dominates at 56% of discoveries, meaning AI is the most prominent technology deployed in library science. Block chain: holds a 13% share, indicating a great deal of interest in using it, potentially enabling secure transactions or data management. Virtual Reality (VR): 11%,

indicating its use in conducting immersive learning or research experiences. Big Data Analytics: Includes 10%, focusing in its application on analytics and application of big data for advanced library science research. Internet of Things (IoT): Also at 10%, means it is used in automating and streamlining library operations.

Percentage

Graph 2

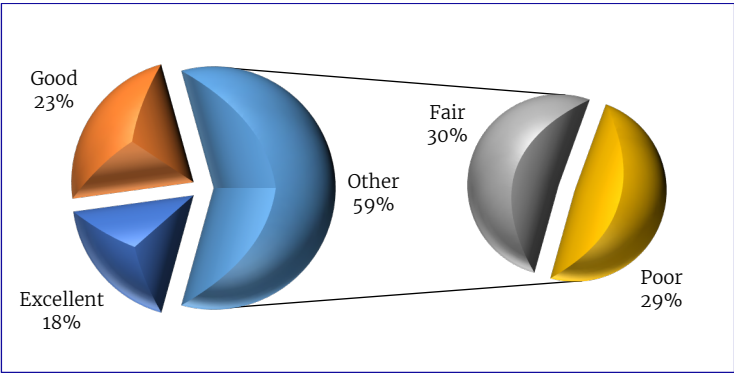


Libraries Support Research

Figure No 3 This chart answers the question: "How well do you think today's libraries support the work of researchers? Excellent 18% think the library works well. Good: 23% think the library does a good job. Fair: 30% of respondents rated library support as fair. Poor: 29% of respondents consider library support to be poor.

Percentage

Graph 3

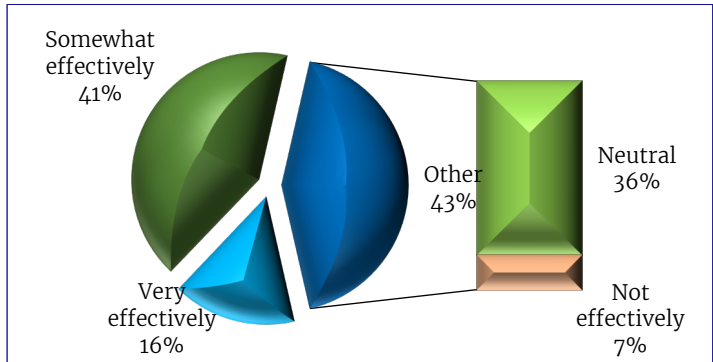


Libraries Utilizing Emerging Technologies

Figure No 4 See how well the library is using emerging technologies. Very effectively (16%): small but significant minorities of respondents believe that libraries excel in emerging technologies. Somewhat effective (41%): The largest group feels that the library works well but still has room for improvement. Neutral (36%): A significant percentage is indifferent, possibly indicating ignorance or lack of technical knowledge. Not effectively (7%): The lowest percentage believes libraries are not using this technology effectively.

Percentage

Graph 4

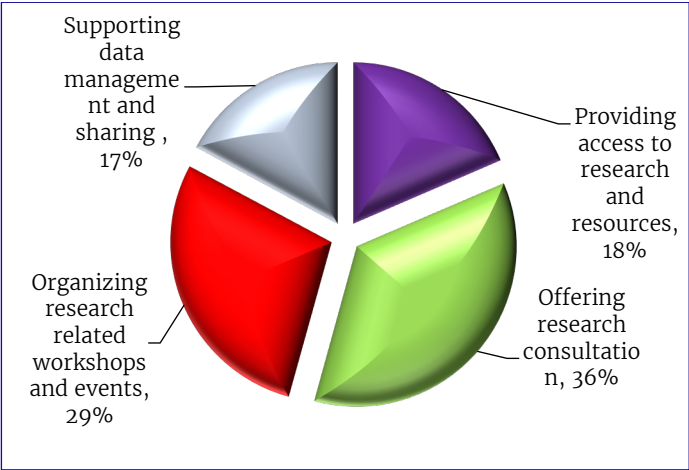


Role of Libraries in Supporting Research

Figure No 5 This pie chart provides an analysis of the role of libraries in supporting research, broken down into four categories along with their percentages Offering research consultation 36% This represents the most important contribution, highlighting the role of libraries in supporting research directly by providing expertise and guidance a emphasize what has been done for them. Organizing research related workshops and events 29% Libraries also emphasize capacity-building activities in the community, focusing on skills development and collaboration in through conferences and meeting. Provide access to research resources 18% Access to research resources and databases remains a key activity, albeit with less emphasis compared to discussions and events. Supporting data management and sharing 17% Libraries are increasingly involved in assisting researchers with data storage, management and sharing responsibilities, an emerging field however comparatively small.

Percentage

Graph 5

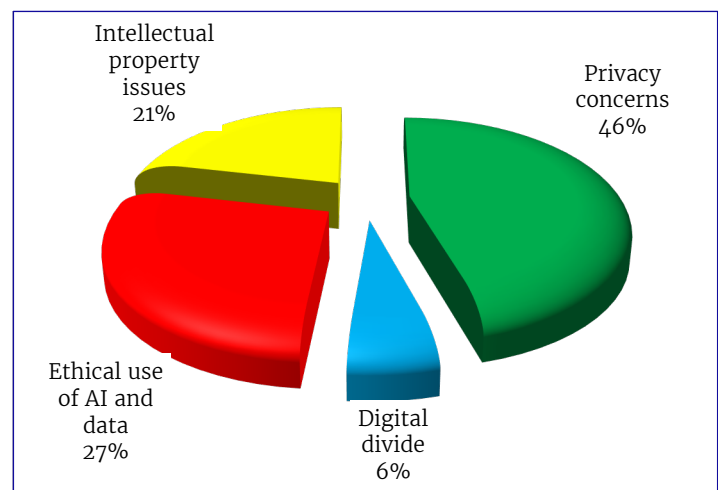


Social and Ethical Challenges

Figure No 6 This pie chart presents the social or ethical challenges libraries face when implementing emerging technologies, broken down into four categories along with their percentages: Privacy concerns 46%: The most important challenge, representing almost half of the responses. This highlights the struggle of libraries to protect user data and maintain privacy in a technology-driven environment. Ethical use of AI and data 27%: Libraries face outstanding challenges in ensuring ethical use of AI and data technology, especially in avoidance avoiding bias and inspection as obvious factors. Intellectual property issues 21%: Moderate level of difficulty, indicating the difficulty of navigating laws relating to copyright, licensing and intellectual property rights in the digital age. Digital divide 6%: A relatively insignificant challenge, meaning that although there are differences in digital access, they are perceived as less severe compared to other issues.

Percentage

Graph 6



Purpose of Usage Emerging Trends in Lis Research

Emerging trends in library and information science (LIS) research highlight emerging areas of interest and innovation in the field. These trends often coincide with technological advances, social needs, and changes in how information is created, accessed, and managed. Examining these developments will enable researchers and practitioners to adapt to changing demands and contribute to the growth of LIS as a discipline.

Purpose

- Identify and address gaps in current research and practice.
- Integrating new technologies into library services.
- Enhancing the user experience with modern tools and practices.
- Contributing to academic discourse on the ongoing development of LIS.
- Ensuring that LIS professionals are relevant in the digital age.

Findings

The following are the major findings of this study

- Libraries and institutions can focus on expanding networks and services for students and librarians to balance stakeholders across all activities. Furthermore, the strong presence of researchers underscores the importance of research support services in libraries.
- The average percentage of emerging technologies adopted in the library and information science research is 20%. This means that while AI takes a huge lead, the library research of other technologies are relatively small but balanced overall.
- A mean score of 2.3 indicates an overall perception of library support slightly less than "fair" (value = 2). This is consistent with the finding that the majority of respondents perceived the support as "adequate" or "good". The results suggest that significant improvements can be made in how libraries support researchers.
- The mean score was 2.66, indicating that on average respondents perceive libraries using emerging technologies as between "neutral" and "somewhat effective."
- This reflects a decline in performance, with obvious potential for improvement to further retain and improve.
- This study finds significant investment in libraries in providing research advice and organizing research-related seminars, while access to resources and data management remain important areas however they are not emphasized much. This study finds significant investment in libraries in providing research advice and organizing research-related seminars, while access to resources and data management remain important areas.
- This study shows that privacy concerns represent the most important challenge, and there are significant differences compared to other issues. The digital divide is less of a concern, though still significant.

Suggestion

The following are some of the suggestions.

- Expand research support services to include tailored support for researchers, such as access to research mentors, dedicated academic libraries, and specialized workspaces.
- Increase researcher outreach to promote, ensure effective use and value of available research support services.
- Invest in training programs to equip librarians and researchers with the skills to effectively use AI and other emerging technologies.
- Expand the range of technologies used in library activities and encourage research and pilot projects without the use of low-technology.
- Partner with technology providers to stay updated on progress and integrate state-of-the-art equipment.
- Conduct regular surveys to identify specific areas where library support is considered inadequate and address those gaps.
- Focus on services that have a direct impact on researchers, such as improving access to resources, prompt responses to questions, and personal support.
- Post success stories and testimonials for users to build confidence in library activities.

- Develop new ways to incorporate technologies that are becoming available, such as using artificial intelligence in cataloging, recommending items based on users' preferences, or using virtual reality to help with research.
- Increase collaboration with academic departments to jointly develop technology-driven solutions that address specific research needs.
- Implement measures to improve access to research data and data management services, including data storage, organization, and archiving.
- Create resource sharing agreements with other organizations to expand access to digital and physical collections.
- Focus more on improving access to e-resources, including better licensing agreements with publishers.
- Implement and communicate clear data security policies to build trust between researchers and users.
- To review and update privacy policy for compliance with current standards and policies.
- Provide training for librarians to better handle sensitive user information.
- To provide digital literacy programs to help users from diverse backgrounds make better use of library resources.
- Invest in technologies or services that ensure all stakeholders have equal access to digital tools and resources.
- Develop key performance indicators (KPIs) to measure the effectiveness of services and technologies.
- Hire a dedicated team to periodically review and update the library offerings in accordance with emerging needs and challenges.
- Use feedback loops to repeat library support tasks.

Conclusion

The emerging trends in Library and Information Science (LIS) transform the way libraries operate and serve their communities. In this research oriented article, the great transformations in the Library and Information Science (LIS) arena over the last quarter have been scoured at the hand of technological advance, user expectations transition and ongoing focus on equitable access to information. It focuses on key areas of integration of innovative technology such as artificial intelligence, big data analytics and block chain being game changers to information management and delivery of service in library. The article also dives into the growing relevance of user centric methods that prioritize inclusivity and community engagement alongside the moral challenges of the digital age, where data privacy and algorithmic bias become big issues. The research seeks to unlock these trends to unearth insights into the changing dynamics of the role of libraries as research and knowledge dissemination facilitators, and as social and ethical agents. In addition, contemporary LIS research relies on the collaboration from a sample of multidisciplinary fields, and therefore such collaboration across a variety of disciplines is required to rever the complex needs of users in a globalized information environment. Lastly, this account aims to enlighten future library practices and expand the landscape of profession in Library and Information Science (LIS) to keep up with the changes of the communities irrespective of their diversity.

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