AI-Powered Libraries:

Redefining the Role of Information Professionals

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Abstract

Artificial Intelligence (AI) is quickly changing how libraries work all over the world. Traditional libraries are becoming smart and modern, using AI to improve services, help users better, and make daily work easier. This paper looks at how library services are changing with AI tools like chatbots, recommendation systems, and automatic cataloguing. It also explains how technologies such as virtual assistants, plagiarism checkers, and data prediction tools are now being used in libraries. As AI handles more routine tasks, librarians are taking on new roles. They are becoming digital teachers, data experts, and advisors who guide users in using information in the digital world. Using AI also brings challenges like protecting user privacy, avoiding unfair results, and making sure AI systems are clear and trustworthy. This paper shows how important it is to use AI carefully and responsibly. In future, libraries will benefit most when humans and AI work together to provide smarter, user-friendly services.

Keywords: Artificial Intelligence (AI); Smart Libraries; Information Professionals; Digital Transformation; Library Automation; Machine Learning in Libraries

1. Introduction

In today's digital world, libraries are changing fast with the help of new technologies. One of the most powerful technologies shaping modern libraries today is Artificial Intelligence (AI)**.** AI refers to machines or computer systems that can perform tasks that normally require human intelligence like understanding language, recognizing patterns, learning from data, or making decisions. The use of AI in libraries is growing every day. From answering users' questions through chatbots to helping organize huge amounts of digital content. AI is helping libraries offer smarter and faster services. It can recommend books based on user interests, help in managing library collections, and even support research by analyzing large sets of data. As AI tools become more common in library systems, the role of information professionals like librarians and library staff is also changing. They are no longer just keepers of books but are becoming digital experts, data managers, and technology guides. AI is not replacing them, but giving them new opportunities to improve user services and make information more accessible. AI is reshaping the library ecosystem by making it more efficient, user-friendly, and intelligent. Understanding this change is important for the future of libraries and for the professionals who work in them.

2. Objectives of the Study

1) To examine the impact of Artificial Intelligence (AI) on traditional library services
2) To identify the evolving roles of librarians and information professionals in AI-integrated library environments
3) To analyze the benefits and opportunities brought by AI in enhancing library services
4) To investigate the challenges and ethical considerations associated with AI in libraries
5) To propose strategies for effective and responsible AI implementation in libraries
6) To promote continuous learning and professional development among information professionals

3. Literature Review

In the past ten years, the use of Artificial Intelligence (AI) in libraries has become an important subject of study. Researchers and professionals have examined how AI is changing library services and the responsibilities of librarians and information professionals.

Cox, Pinfield, and Rutter (2019) studied the influence of AI technologies such as machine learning, chatbots, and natural language processing in academic libraries. Thanuskodi (2020), in his edited book Handbook of Research on Digital Content Management and Development in Modern Libraries, described how "smart" technologies like AI are helping libraries to improve information retrieval, automate services, and enhance user experience. Bawden and Robinson (2020) discussed how digital technologies, including AI, are transforming the professional roles of librarians. The International Federation of Library Associations and Institutions (IFLA) has also emphasized the importance of training and up skilling information professionals in the age of AI.

Several libraries have already introduced AI-based systems. The "Emma" chatbot, first launched in the Mentor Public Library, Ohio (U.S.A.), in 2009, worked as a virtual reference librarian to answer users' questions about catalog searches, library hours, and policies. Recently, in May 2025, the University of Westminster introduced "Liby," an AI-based library assistant that helps students navigate digital resources and LibGuides 24/7.

Well-known institutions such as the British Library, MIT Libraries, and the National Digital Library of India (NDLI) are also using AI to improve their services. These libraries use AI tools to study user behaviour, provide personalized recommendations, and support automated cataloguing. Similarly, India's national learning platform SWAYAM now uses AI to suggest study materials and promote adaptive learning based on individual learners' progress.

4. The Changing Landscape of Library Services

Library services are rapidly changing due to the use of artificial intelligence (AI)**.** Traditional libraries focused mainly on physical books, manual cataloguing, and traditional reference services. But today's modern libraries are combining traditional values with AI-powered technologies to offer smarter, faster, and more personalized services. Here's how:

A. Traditional vs. AI-Integrated Services

Traditional library services include manual cataloguing by librarians, physical circulation of books, in-person reference and help desks, and the use of printed indexes and subject guides.

In contrast, AI-integrated library services use technologies like machine learning for automated cataloguing, provide digital access to e-books and online journals, and offer virtual assistants or chatbots that help users anytime, 24/7.

B. Smart Cataloguing, Automated Indexing, and Metadata Enrichment

- AI tools now help libraries automatically organize resources**.**
- They assign subjects, keywords, and tags to books and articles using natural language processing (NLP).
- This makes it easier for users to find exactly what they are looking for faster and more accurately**.**

C. AI in Virtual Reference and Chatbots

- AI-powered chatbots like "Liby" or "Emma" answer users' questions instantly.
- They can guide users to resources, answer FAQs, and even help with login or search issues.
- These tools offer 24/7 assistance, reducing pressure on library staff.

D. Personalized Recommendations Using Machine Learning

- Like Netflix or Amazon, some library platforms now suggest books, articles, or databases based on a user's reading or search history.
- This makes the library experience more engaging and relevant for each user.

E. AI-Powered Discovery Systems

- Tools like Ex Libris Primo or EBSCO Discovery Service use AI to improve search results.
- They provide relevant and related materials quickly even from large digital collections.

F. Plagiarism Detection and Academic Integrity Tools

- AI software helps detect copied content in student assignments or research.
- Libraries can offer these tools to support ethical learning.

G. Voice Search and Accessibility Tools

- Users can now search library catalogues using voice commands**.**
- AI also supports tools for visually impaired users by converting text to speech.

H. Predictive Analytics for Library Planning

- AI analyzes user data to help libraries predict future needs, such as what kind of books or services will be popular.
- Helps in decision-making and budget planning**.**

The shift from traditional to AI-integrated services is transforming libraries into smart, user-friendly, and inclusive spaces**.** With the help of AI, libraries can now offer more efficient, personalized, and accessible services**,** making them more valuable than ever in the digital age.

5. Redefining the Role of Information Professionals

The rise of Artificial Intelligence (AI) in libraries has significantly transformed the role of librarians and information professionals. No longer limited to traditional duties like cataloguing and circulation, they now take on technology-driven, user-focused, and strategic roles. Here's how their responsibilities are evolving:

A. AI System Management and Oversight

- New Role: Information professionals now oversee AI tools such as chatbots, discovery systems, and recommendation engines.
- Responsibility: Ensure that AI applications align with library goals, work properly, and provide ethical, unbiased services.

B. Data Analytics and User Behaviour Analysis

- New Role: Act as data analysts to understand user behaviour and improve services.
- Responsibility: Use AI-generated data to study user needs, usage trends, and optimize resource collections.

C. Digital Literacy and AI Education

- New Role: Educators and trainers in digital and AI literacy.
- Responsibility: Teach users how to use AI-based tools, such as virtual assistants, advanced search engines, and plagiarism checkers.

D. Metadata Management and Smart Cataloguing

- New Role: Collaborators with machine learning tools for metadata enrichment and automatic indexing.
- Responsibility: Validate and fine-tune AI-generated tags and classifications to maintain quality and discoverability.

E. Content Curation and Personalization

- New Role: Curators of personalized digital experiences.
- Responsibility: Work with AI tools to provide customized recommendations for students, researchers, and general readers.

F. Ethical and Legal Oversight

- New Role: Guardians of information ethics in the AI age.
- Responsibility: Monitor for bias, misinformation, privacy risks, and copyright violations in AI-powered tools and content delivery.

G. Lifelong Learning and Professional Development

- New Role: Constant learners in a technology evolving environment.
- Responsibility: Stay updated with the latest developments in AI, machine learning, and digital tools to keep services current and relevant.

The role of information professionals in AI-powered libraries is being redefined from custodians of books to digital knowledge facilitators. Their tasks now blend technology, ethics, education, and user experience design. Embracing these new responsibilities ensures that libraries remain smart, inclusive, and impactful in the digital era.

6. AI Tools and Technologies Used in Libraries

Libraries are now using Artificial Intelligence (AI) to make their services better, help users more easily, and reduce staff workload. Here are some important AI tools and technologies used in modern libraries:

A. Chatbots and Virtual Assistants

These AI tools help users at any time by answering questions and guiding them on how to use library services. Examples include Libby, Emma, Ask-A-Librarian, and chatbots on library websites. They provide quick assistance and reduce the workload for library staff.

B. AI-Powered Discovery Systems

These tools help users find books, articles, and information more quickly and accurately. They understand the meaning behind questions, not just the individual words. Examples include Ex Libris Primo and EBSCO Discovery Service (EDS).

C. Machine Learning for Indexing and Classification

It automatically adds topics, tags, or classification codes to books and articles. This AI reads the content and helps improve how materials are organized and discovered in the library.

D. Recommendation Engines

This tool suggests books, articles, or videos based on what the user has read or searched before. Like Netflix or Amazon, it learns your interests and gives useful suggestions. It helps users discover more helpful materials.

E. Natural Language Processing (NLP)

It helps computers understand and respond to human language. It is used in chatbots, smart search tools, and tools that summarize or study text.

F. Facial Recognition and Biometric Systems

It is used for face or fingerprints for user security and access. It is checking attendance, entering restricted areas and self-checkout systems.

G. Robotic Process Automation (RPA)

It automatically handles routine tasks like sending reminders about due books, updating user information, and sending emails.

H. Plagiarism Detection Tools

These tools are used in libraries to teach students about plagiarism and to help with writing and research. Turnitin, Urkund, and Grammarly are commonly used as plagiarism detection tools.

I. Text and Data Mining Tools

These tools help analyze and understand large amounts of text. They are very useful for research, especially in subjects like history, literature, and social studies. Examples of such tools include Voyant Tools and AntConc.

J. Predictive Analytics Tools

These tools help libraries guess what will happen in the future by looking at past data. This tools used for predict how many people will visit the library, know which books or subjects will be in demand and plan for buying books, hiring staff, or improving services.

AI Technique	**Application in Library**	**Example Tool**
Machine Learning	Book recommendation, trend analysis	IBM Watson, TensorFlow
Natural Language Processing	Chatbots, question answering	ChatGPT, Dialogflow
Image Recognition	Scanning and OCR (Optical Character Recognition) for archives	Google Vision, ABBYY FineReader
Predictive Analytics	Predicting user needs	RapidMiner, SAS
Robotic Process Automation	Automating repetitive library tasks	UiPath, Automation Anywhere
Speech Recognition	Voice-based user interface	Alexa, Google Assistant

Fig 1: *AI Tools and Technologies Used in Libraries*

AI tools are changing how libraries work. They make services faster, smarter, and more helpful for users. From intelligent chatbots to smart search systems and data analysis tools, libraries are becoming future-ready learning hubs through the power of AI.

7. Opportunities for Information Professionals

The rise of Artificial Intelligence (AI) in libraries has created new opportunities for information professionals. Rather than replacing them, AI helps librarians take on more meaningful roles. They now manage digital collections, organize e-resources, and ensure smooth online access. AI tools allow them to analyze user data, improve services, and support decision-making in resource planning. Librarians also train and maintain AI systems like chatbots to provide accurate information. They play an important role in teaching users how to use information responsibly, focusing on digital ethics and plagiarism awareness. In addition, librarians support research through AI tools such as text mining and citation tracking, and help develop policies on data privacy and ethical AI use in libraries

8. Challenges and Ethical Considerations

AI offers many benefits to libraries, including better search systems and personalized user services, but it also brings challenges and ethical issues. One major concern is user privacy and data security, as many AI tools collect and analyze personal data. Libraries must ensure this information is safely managed and users' privacy is protected. Another challenge is the lack of digital literacy among staff, which calls for regular training and skill development. Job insecurity is also a concern, but AI should be seen as a supportive tool that helps librarians focus on creative and complex tasks instead of routine work. Financial limitations can make adopting AI difficult due to high costs of software, hardware, and internet infrastructure. Lastly, ethical use, transparency, and accountability are vital. Libraries must ensure fair use of AI and inform users when they are interacting with AI systems.

9. Future Outlook: The Human-AI Collaboration in Libraries

In the future, libraries will operate through strong collaboration between humans and artificial intelligence (AI). While AI will manage routine and repetitive tasks, information professionals will focus on areas requiring human judgment, creativity, and personal interaction. This partnership will enhance user services, with AI providing quick answers and librarians offering deeper assistance and personalized support. AI will also aid in smarter decision-making by analyzing data to identify trends and user needs, helping librarians plan better services. Continuous learning will be vital as librarians develop new skills in technology and data management. Together, humans and AI will drive innovation through tools like virtual reality learning spaces and intelligent archives. While AI streamlines operations, librarians will continue to strengthen community engagement; ensuring libraries remain inclusive and human-centred. This human-AI partnership will make libraries more efficient, innovative, and valuable while preserving their essential human touch.

10. Conclusion

Artificial Intelligence is transforming the way libraries function, offering faster, smarter, and more personalized services. From chatbots and smart search tools to data analysis and automation, AI is helping libraries become more efficient and user-friendly. However, this transformation also brings challenges such as data privacy, ethical concerns, and the need for new skills.

Rather than replacing information professionals, AI is creating new opportunities for them to grow and take on more specialized roles. Librarians are now becoming digital educators, data analysts, policy advisors, and key partners in technology development. By working alongside AI, they can focus more on human-centred services like research support, community engagement, and digital literacy training.

The future of libraries will depend on a strong collaboration between human intelligence and artificial intelligence. This partnership will ensure that libraries remain not only technologically advanced but also inclusive, ethical, and supportive learning spaces for all.

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