

DEVELOPING THE DIGITAL SKILLS OF LIBRARY PROFESSIONALS IN THE AGE OF ARTIFICIAL INTELLIGENCE

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Abstract: At this stage in the development of society, artificial intelligence becomes a tool as familiar as a calculator or search system. The library sector is not an exception: in recent years, there has been a lot of discussion on the prospects and practices of introducing AI technologies into the activities of libraries. These changes pose new requirements for the professional training of specialists, especially with regard to the formation and development of digital competences.

The modern librarian is not only a custodian and organizer of information resources, but also a mediator between the user, information technology and the digital environment. In this context, knowledge of data handling skills, understanding of algorithms for searching and processing information, as well as the ability to use digital platforms and intelligent services become key elements of professional competence.

The article is an author's understanding of current problems of digital skills of university librarians and an analysis of their possibilities for development under various forms of professional education with the use of new information technologies. The development of complex competencies related to the use of various online services, analytical tools and artificial intelligence tools comes to the fore.

Special attention is given to the integration of librarians into the digital space of higher education. In the context of digitalization, universities are actively implementing electronic resources, distance learning platforms and intellectual assistants, librarians have the opportunity not only to accompany users in the process of searching for information, but also to act as mentors in mastering digital practices.

The results of the study show that the development of digital skills of specialists is effectively achieved through a complex of forms of professional development: online courses, webinars, modular training programs and project activities. This approach allows individual educational trajectories to be taken into account, supports motivation for self-learning and forms a sustainable culture of digital professionalism.

The development of digital competences of library professionals in the age of artificial intelligence is an essential condition for the successful transformation of libraries. It ensures their digital competitiveness and strengthens the role of librarians as mediators between information, technology and society.

Keywords: artificial intelligence, library, academic librarian, digital transformation, artificial intelligence tools, digital skills, digital competencies, library and information education, professional development, professional training of librarians.

JEL Classification: D83; I23; L86.

1 Introduction

Today, we live in a world where artificial intelligence (AI) is becoming as common a tool as a PC or search engine. The widespread use of artificial intelligence and digital technologies is

radically changing and influencing the development of our society. It allows us to improve management efficiency, optimize production processes, create a favorable environment for innovative entrepreneurship, and strengthen information security. Even areas that have traditionally been considered the domain of human influence are increasingly encountering the possibility of artificial intelligence implementation. Librarianship is no exception, and the introduction of AI into this field is now increasingly being discussed by both foreign and domestic experts and researchers.

The implementation of digital technologies is redefining the forms and methods of library and information services, as well as the ways in which librarians and users communicate with each other. In this context, the development of digital information and resource management systems is of great importance. Intelligent search applications speed up the process of finding relevant information and delivering it to users.

Integrating these technologies in libraries automates activities and processes, optimizes information flows to meet the complex requirements of the modern user.

At the same time, the digital transformation creates significant challenges for libraries that require adapting their products and services to new technologies. It redefines the role and functions of the library in the institution's information infrastructure. A major challenge in this changing information environment concerns the development of digital competencies of information science professionals.

The present study analyzes the use of artificial intelligence in the work of libraries and its impact on the training and development of their digital competencies. The topic under discussion is relevant from the perspective of adapting the work of libraries to international trends of implementing innovative tools based on artificial intelligence. Subject experts, researchers as well as practitioners recognize the strong influence of digitization of information services. The acceleration of digital transformations in society requires libraries to pay particular attention to the training and development of the digital skills of their staff. At present digitization is becoming a prerequisite for maintaining library competitiveness in the information environment. The aim of our research is to identify effective approaches and methods for professional development of librarians in the era of digital transformation.

2 Artificial intelligence and its impact on the library

Artificial intelligence is a separate field of computer science. Experts argue that the use of algorithms allows computers to process large amounts of data and information and develop systems that analyze and manage them like humans. We note that artificial intelligence has developed rapidly in the 21st century, which experts explain by the following reasons:

The emergence of powerful computers that can process and analyze huge amounts of data with greater speed and efficiency;

The volume of data from social networks and other environments allows artificial intelligence to learn;

New technologies and approaches support the development of artificial intelligence;

Machine learning and neural networks are becoming increasingly accessible and provide opportunities to create smarter systems (Yandex.Praktikum, 2025).

Today, new technologies are used in all areas of activity, including education and research. In this context, the library as an integral part of the educational and research process also actively participates in the digital transformation of activity. Artificial intelligence is becoming one of the important tools in the development of modern libraries, allowing them to remain competitive. Table 1 presents examples of practical application of artificial intelligence in modernized libraries.

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“Competitiveness and Innovation in the Knowledge Economy”
September 26-27, 2025
Chisinau, Republic of Moldova

Table 1. Practical application of artificial intelligence in the context of library activities

Library functions	Processes
Automation of operations	Cataloging and classification of materials, inventory management, processing user requests, etc.
Personalization of services	AI-based systems perform: analyze user behavior and preferences to provide personalized recommendations for books, scientific articles, and other resources.
Interactive customer service	creation of chatbots and virtual assistants to support users: communicating with users, answering their questions, helping them navigate library resources, other services.
Analytics and forecasting	collecting and analyzing data on library usage patterns, which helps predict future trends, improve resource planning, and offer more effective services.

Source: authors based on Tukhtaeв (2023)

Therefore, the use of neural networks in libraries can automate cataloging and indexing processes, which significantly speeds up the processing of new arrivals, quickly updates the catalog, and offers users relevant literature. An example is the use of machine learning algorithms to recognize and systematize electronic documents.

An important area is the introduction of intelligent search engines capable of interpreting complex user queries and generating relevant results. With the help of AI systems, libraries are creating intelligent search mechanisms that analyze user queries and return more precise results. More libraries are introducing chatbots and virtual assistants that advise readers online. Personalizing recommendations with artificial intelligence makes the library's interaction with users more individualized and convenient, while improving the quality of service. Simple algorithms analyze the history of book loans and help recommend literature that is of interest to specific readers.

In academic libraries, artificial intelligence is integrated into digital libraries, becoming an important element of the educational environment, facilitating access to necessary materials for students and researchers. It helps create virtual assistants for readers, speeds up information processing, and expands the range of electronic services.

Intelligent search and analysis of large data sets allow for the identification of trends in resource usage and the optimization of collections.

Special mention deserves national library projects related to AI for digitization and preservation.

Development and enhancement of digital skills is complemented by artificial intelligence tools. They come to the aid of librarians, but they still need to be studied in order to achieve the desired effect.

Table 2. Best AI tools for productivity

#	Tool name	Area of productivity enhancement
1	ChatGPT	AI chatbots
2	Gemini (formerly Bard)	AI Chatbots
3	Microsoft Copilot AI	AI Chatbots
4	Nedetctabil.ai	AI content creation
5	Grammarly	AI content creation

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6	Copy.ai	AI content creation
7	DALL-E 3	AI content creation
8	Notion AI	AI task management
9	Clickup	AI task management
10	Otter.ai	AI task management

Source: Perry (2025)

Thus, artificial intelligence is already being implemented in librarianship and offers important opportunities to improve the work of libraries and meet the needs of users.

However, the implementation of artificial intelligence in libraries is associated with a number of problems and challenges. Here are some of them (Tukhtaev, 2023):

Security and privacy issues. AI can compromise data privacy, which is traditionally an important value for libraries, especially in today's digital age.

Legal issues. Liability for errors made by AI-based systems or for violations of data processing and storage rules.

Staffing requirements. Library staff must have the appropriate skills and knowledge. Training staff to work with new technologies may require additional resources.

Budget constraints. For small libraries with limited budgets, AI implementation is expensive.

Bias and prejudice. If AI is trained on biased data, it can reproduce and reinforce existing prejudices and inequalities.

Accessibility issues. For some users who lack the necessary technological skills or have limited access to technology, the implementation of AI may create barriers for others, especially those.

Ethical aspects of AI application. Ethical regulation is essential in this era of mass digitalization and the implementation of AI technology (Bryson, 2018) (Heinrichs, 2022).

Artificial intelligence assists library staff in their practical activities – reading and distributing books, attending events, conducting library tours, answering reader questions, selecting literature, processing and classifying texts, compiling news feeds, and voice search.

The disappearance of the librarian profession. It is important to recognise and overcome the problems and challenges associated with the introduction of AI. Addressing challenges requires a comprehensive approach that includes training, strategic planning, continuous learning and adherence to ethical and legal standards. The introduction of artificial intelligence in libraries should be carefully planned and monitored regularly to ensure the security, confidentiality, fairness and accessibility of services for all users.

3 Developing the digital skills of librarians in the AI context

The use of technology is transforming modern libraries into centers that process, structure, and disseminate knowledge. Libraries are now facing technological transformations that are unprecedented in speed and scale in the form of generative artificial intelligence. Understanding and mastering the tools that emerge daily, particularly in the field of information technology, is a challenging task due to the fast pace of technological development. This means that librarians must develop the digital skills of library professionals so that they can use technology effectively and remain a key link between knowledge and society. Here are just a few areas that require digital skills:

Creating digital content in various formats: text, images, video, databases, etc., which involves using applications and tools for scanning, recognizing, and editing documents.

Digital content management – designing and developing tools for promoting and managing resources, etc.

Information and knowledge management specialist Dr. D. Savich believes that the professional training of library specialists requires the development of the following competencies:

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- digital literacy, or technical knowledge;
- working with information and cognitive overload;
- flexibility and adaptability;
- continuous microlearning and personal development;
- emotional intelligence and social skills;
- cultural diversity;
- transdisciplinary approach;
- mobile workforce and remote work;
- understanding the generation gap;
- high-level digital ethics (CILIP: The Library and Information Association, 2021).

Thus, the digital competencies necessary to ensure the functioning of libraries in the context of digital transformation are now closely intertwined with the development of general cultural, creative, and communicative components in library education, as well as the strengthening of the humanities training of library specialists who serve users. Successful mastery of digital skills and abilities, as well as teaching users how to use them, makes librarians conduits of open science and open access to information, which contributes to the unhindered dissemination of knowledge in society and the formation of well-rounded individuals.

Electronic libraries, databases, digital archives – all of this requires the ability to quickly find, structure, and provide information to users. Working with metadata, search skills, and the ability to evaluate the reliability of sources are important components of the competence of a modern librarian.

In the library sector, a digital educational environment is gradually being formed as part of the professional development of library specialists in cultural universities through the market for distance learning services that provide high-quality additional education is not sufficient, as noted by researchers due to limited human, technological, and technical resources (Tikunova, 2019).

The first thing to note is that these are additional professional education programs and advanced training courses that are designed to give practical mastery of digital services. Online courses and webinars are becoming more and more important, as they allow librarians to study at a time that is convenient for them and master new technologies at their own pace. Librarians have the chance to access the best global educational practices thanks to massive online courses, which are becoming a promising direction.

Formal continuing training programmes, professional development courses and internships have been shown to facilitate the exchange of experience and the enhancement of librarians' digital competencies.

4 Conclusions

The integration of artificial intelligence within the library constitutes a substantial milestone in its digital global transformation. The integration of artificial intelligence within the domain of librarianship has been shown to engender novel opportunities, thereby fostering enhanced interaction between libraries and the community whilst ensuring the preservation of libraries' preeminent status in the realm of information.

The utilisation of AI tools within bibliographic services has seen a marked increase, encompassing activities such as metadata extraction, bibliographic record creation, information retrieval, information evaluation and dissemination, and reference services.

Advancements in information technology have had a considerable impact on the expansion of forms and methods in the domain of continuing vocational education. Virtual and augmented reality, artificial intelligence tools offer the possibility of interaction with the use of databases and other digital information resources. At the same time, these tools support personalization of learning and teaching.

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The librarian who develops skills in using digital information resources becomes a competent guide and intermediary between the user, technologies and digital information resources. The fundamental elements of the professionalization of librarians in this framework are skills related to data management, understanding algorithms for searching and processing information, as well as the use of digital platforms and intelligent services.

Libraries in the Republic of Moldova could introduce the following objectives in their future agenda of activities:

Integration of artificial intelligence tools in libraries and their consolidation for service diversification, resource optimization and improvement of user experience.

Permanent adaptation to technological innovations to maintain the relevance of the library in the current information system.

The development of librarians' digital competencies should become a strategic priority and be reflected in all policy, regulatory and planning documents.

Continuing professional development should include current topics such as data and metadata management, online security, critical evaluation of information sources and the introduction of new services based on the use of digital products.

Promote the new roles and functions of the librarian as a mediator between users and modern information technologies and as a creator of digital content.

Therefore, the acceleration of digital transformations in society requires the modernization of librarians' professional training. Professional development and specialized education need to prepare quality professionals capable of effectively integrating content from traditional formats into the digital environment and providing services that fully meet the requirements of the modern user.

An integral part of the future of libraries is the introduction of artificial intelligence. In the near future, we will see more interesting and innovative applications of AI in the library sector, which will significantly expand the possibilities for librarianship and increase the competitiveness of libraries in the digital sphere.

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