



Modern bibliographic technologies and their role in the development of science

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Annotation. *Modern bibliographic technologies are creating new opportunities for managing information and resources. This article discusses methods for managing bibliographic data through electronic catalogs, digital databases, and automated systems. The use of bibliographic software (such as Zotero, EndNote, Mendeley) enables researchers to streamline their research work and make efficient use of scientific materials.*

Keywords: *modern bibliography, electronic catalogs, scientific research, Zotero, Mendeley, EndNote, information technology, automated systems.*

Современные библиографические технологии и их роль в развитии науки

Аннотация. *Современные библиографические технологии создают новые возможности для управления информацией и ресурсами. В данной статье рассматриваются методы управления библиографией с использованием электронных каталогов, цифровых баз данных и автоматизированных систем. Обсуждаются возможности использования библиографических программ (таких как Zotero, EndNote, Mendeley), которые позволяют исследователям оптимизировать свои научные работы и эффективно использовать источники.*

Kalit soʻzlar: *современная библиография, электронные каталоги, научные исследования, Zotero, Mendeley, EndNote, информационные технологии, автоматизированные системы.*

Zamonaviy bibliografik texnologiyalar va ularning ilm – fan rivojidadagi o‘rni

Annotatsiya. Zamonaviy bibliografik texnologiyalar axborot va resurslarni boshqarishning yangi imkoniyatlarini yaratmoqda. Ushbu maqolada elektron kataloglar, raqamli ma’lumotlar bazalari va avtomatlashtirilgan tizimlar orqali bibliografiyani boshqarish usullari yoritilgan. Bibliografik dasturlar (masalan, Zotero, EndNote, Mendeley) yordamida tadqiqotchilar ilmiy ishlarini optimallashtirish va ulardan samarali foydalanish imkoniyatiga ega bo‘lishlari muhokama qilingan.

Kalit so‘zlar: zamonaviy bibliografiya, elektron kataloglar, ilmiy tadqiqotlar, Zotero, Mendeley, EndNote, axborot texnologiyalari, avtomatlashtirilgan tizimlar.

INTRODUCTION

As we all know, in today’s rapidly changing era, modern bibliographic technologies are becoming an integral part and a key factor in managing scientific information flows and systematizing research results. At the same time, due to the rapid development of science, the flow of information is increasing significantly, and this process reflects the growing need of researchers and scientists for accurate, reliable, and systematized bibliographic sources in their studies. Modern bibliographic technologies serve to effectively organize and develop the processes of managing, searching, systematizing, and analyzing scientific information.

As bibliographic technologies continue to improve, researchers are gaining opportunities to easily find scientific literature, evaluate its reliability, automatically generate reference lists, and expand scientific collaboration. Electronic catalogs, bibliographic databases, scientific citation systems such as Scopus, Google Scholar, and Web of Science, as well as bibliographic management software programs like Zotero, Mendeley, and EndNote, have already become an inseparable part of modern scientific research.

When discussing modern bibliography, it is first necessary to understand the meaning of the concept of bibliography itself and the purposes for which it holds significant importance for us.

The term “bibliography” was first used in Ancient Greece, and when translated literally, *biblion* means “book” and *grapho* means “I write.” Before the beginning of book publishing, this concept was used in the sense of writing and copying books. At that time, writing and copying books required manual labor. Those who performed this work were called bibliographers [1].

LITERATURE REVIEW AND METHODS

In conducting research on modern bibliography, several sources are of primary importance. In particular, the work titled “*Fundamentals of Scientific Research Activity*” by G.A. Asilova highlights research methods in this field. The author emphasizes that, at the initial stages of scientific research, it is necessary to study and systematize literature related to the topic. In this process, compiling a bibliography on a specific topic is considered an important step.

In the textbook, the following types of activities are recommended at the initial stage of scientific research:

1. Preparing reports or abstracts on individual topics of the studied courses.
2. Compiling a bibliography on a specific topic.
3. Participating in the preparation of educational-methodical manuals, tables, models, and mock-ups.
4. Preparing drawings, diagrams, and posters based on departmental tasks.

5. Participating in the preparation of illustrative materials on the topic required for lectures [3].

Among these activities, “compiling a bibliography on a specific topic” holds a special place. It enables the researcher to systematically study existing literature on the topic and identify relevant sources for future research. Overall, Asilova’s textbook provides detailed information about the role of bibliography in scientific research activity and its development stages, as well as methods of compiling it. At the same time, the use of bibliographic management software is of great importance in modern scientific research. Today, the most popular programs include Zotero, Mendeley, and EndNote. These tools allow researchers to manage scientific sources, generate citations, and automatically create bibliographies. Zotero is a free and user-friendly software that helps researchers collect, organize, annotate, cite, and share research materials. It is integrated with web browsers and offers features such as online synchronization, in-text citation insertion, annotation tools, bibliography generation, and integration with word processors.

Mendeley is also a free software designed for managing scientific research and facilitating collaboration. It serves as a convenient tool for viewing PDF and DOC format documents. Mendeley enables the automatic import of documents from scientific articles and databases into the user’s library. If a PDF file of a document is available, the program automatically saves it and extracts bibliographic information. If a PDF file is not available, it saves a copy of the web page instead [4]. In addition, users can manually enter bibliographic data. Alongside this, EndNote can also be used as a supporting tool in the same field.

In modern bibliography, information technologies play an important role in increasing the efficiency of information-library institutions. Libraries enter books and other materials from their collections into electronic catalogs, providing users with convenient search and access. This method is faster and more efficient compared to traditional card catalogs. Information-library services can generally be divided into traditional and non-traditional services. Traditional services include book lending, cataloging, bibliography, and collection management, while non-traditional services include services based on modern information technologies [5].

This article discusses methods for managing bibliographic data through electronic catalogs, digital databases, and automated systems. The study is based on the analysis and systematization of scientific literature related to modern bibliographic technologies. The methodological basis of the article includes the study of bibliographic sources, the analysis of electronic catalog systems, and the examination of bibliographic management software such as Zotero, Mendeley, and EndNote. These tools are considered as practical means for searching, storing, citing, and systematically organizing scientific sources.

The article also uses descriptive and analytical methods to explain the role of modern information technologies in bibliography. Electronic catalogs, digital databases, automated library systems, and bibliographic software are analyzed as the main tools for improving the efficiency of scientific research and academic activity. In addition, the article examines the importance of digitization in information-library institutions. Rare and valuable books, manuscripts, and documents are being digitized, and their electronic versions are being created. This process not only facilitates their preservation but also provides wider access for users. Thus, the methods used in the article are mainly based on literature analysis, bibliographic systematization, descriptive analysis, and the examination of digital tools used in modern bibliographic management.

RESULTS AND DISCUSSION

Electronic catalogs are digital databases that enable the systematic registration, searching, and use of information resources. They play an important role in the process of storing and organizing bibliographic information. While traditional bibliography was

presented in the form of paper-based catalogs, card indexes, and manuals, modern technologies significantly contribute to accelerating these processes and distributing information on a global scale.

The main advantages of electronic catalogs in relation to bibliography are as follows:

1. **Automated data processing.** In this process, bibliographic information is automatically analyzed and presented to users according to specific criteria.
2. **Globalization and integration.** Electronic catalogs are connected to international information networks, enabling access to resources in different languages and formats.
3. **Fast search and analysis.** They provide the ability to quickly search by keywords, author, subject, or other parameters.
4. **Remote access.** They allow users to access library resources from any distance via the internet.

Today, large libraries are using integrated library information systems. ILS Integrated Library Systems operate in this way. Such systems integrate and manage cataloging, bibliographic data processing, user services, and collection management processes within a single platform. Widely used electronic catalog systems around the world include MARC, OCLC, Koha, Aleph, and Ex Libris Primo. MARC Machine-Readable Cataloging is an international format designed for the standardization of bibliographic records. OCLC – Online Computer Library Center is one of the largest bibliographic databases in the world. Koha, Aleph, and Ex Libris Primo are integrated systems designed for managing library catalogs and providing convenient services to users. Bibliography and electronic catalogs are closely interconnected and complement each other through modern information technologies. The development of electronic catalogs not only facilitates bibliographic research but also expands access to global knowledge resources for readers and researchers. Therefore, bibliographic science will continue to evolve in the digital information environment, becoming enriched with innovative solutions and new transformations, and maintaining its important role in the future.

In modern bibliography, information technologies play an important role in increasing the efficiency of information-library institutions. Libraries enter books and other materials from their collections into electronic catalogs, providing users with convenient search and access. This method is faster and more efficient compared to traditional card catalogs. Information-library services can generally be divided into two types: traditional and non-traditional services. Traditional services include book lending, cataloging, bibliography, and collection management, while non-traditional services include services based on modern information technologies. Today, we can observe an increasing number of users of non-traditional information-library services [5].

Digitization is another important result of modern bibliographic development. Rare and valuable books, manuscripts, and documents are being digitized, and their electronic versions are being created. This not only facilitates their preservation but also allows wider access for users. According to Clause 72 of the Presidential Decree of the Republic of Uzbekistan No. PF-60 dated January 28, 2022, “On the Development Strategy of New Uzbekistan for 2022–2026,” measures are defined to further develop library services for the population, promote reading culture, and implement the national idea of a “Nation of Book Lovers.” As a result, in the higher education system, tasks have been set to implement electronic library platforms for digitizing textbooks and scientific literature [6].

The Ministry of Higher Education, Science and Innovation and the Center for Higher Education Development Studies have developed such a platform, and currently more than 400,000 educational and scientific publications from higher education institutions across the country have been uploaded. This has created broad access for students, faculty members, and researchers nationwide, which can be considered a significant outcome of ongoing reforms [7].

In the modern information society, effective management of bibliographic data plays a crucial role in enhancing the efficiency of scientific research and academic activities. Bibliographic management refers to the process of searching, storing, citing, and systematically organizing scientific sources, and it serves as an essential tool for researchers, librarians, and students. Advanced technologies and automated software solutions simplify the management of bibliographic information and make scientific work more efficient.

CONCLUSION

In conclusion, modern bibliographic technologies are of great importance for the development of science and provide significant advantages for researchers and academic communities. These technologies enable efficient searching, storing, and analyzing of scientific information, thereby accelerating research processes and increasing productivity. At the same time, the development of bibliographic management tools and the expansion of artificial intelligence capabilities are expected to further improve the quality of scientific research in the future. Therefore, the proper and rational use of modern bibliographic technologies has a positive impact on the stages of scientific development. Continuous progress in this field will undoubtedly contribute significantly to the further advancement of science and the field of bibliography.

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